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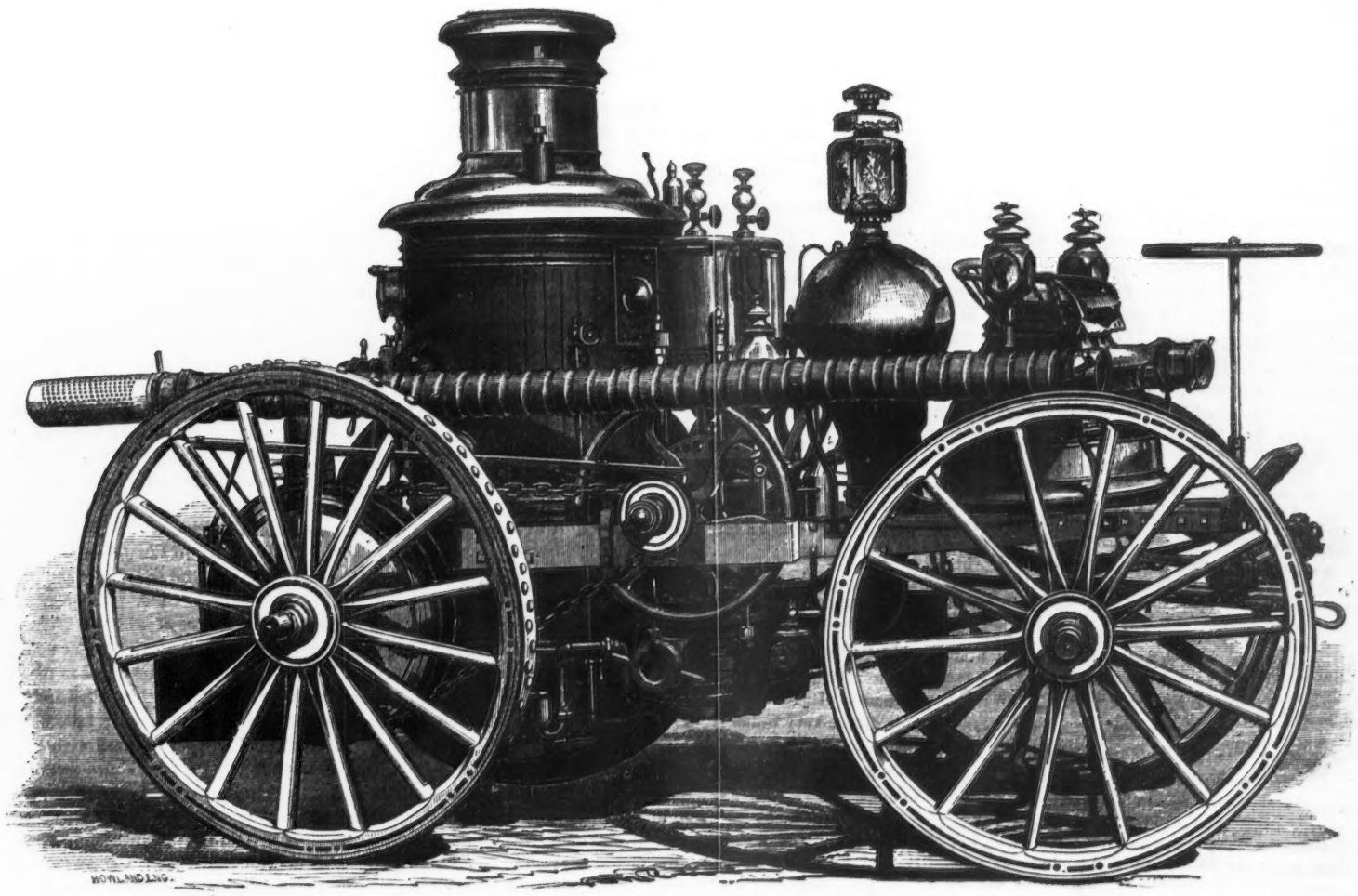
A Self-Propelling Fire Engine.

During the time when New Yorkers were thrown, not upon their "beam ends," but upon their natural and proper ends, for the means of locomotion, a self-propelling steam fire engine made its appearance in the streets, and, after a few trials of its running powers, was put to work in the ordinary service of the Fire Department. During a late fire it stood in front of our office, on which occasion we had an opportunity of examining its construction. It is made by the Amoskeag Manufacturing Company, of Manchester, N. H., and differs in no way from the ordinary engines made by that company, and in use all over the country, except in the self-propelling attachment, which is applied in a very simple manner. The driving wheel shaft is lengthened sufficiently to carry a small drum, nearly in a line with one of the rear wheels. To this wheel a large drum is bolted or cast on, and is moved by a chain from the driving shaft. This apparatus is applied to only one of the wheels, in order to allow the machine to make, without inconvenience, those short curves which are inevitable in crowded streets and at corners. It has proved to be amply sufficient for the work. We saw the engine running down Fifth avenue one evening, and could not but notice the ease with which the engineer steered it and controlled its speed. The latter was changed twice in running half a block, and the rapidity with which a change from fast to slow motion was made was really surprising. The sidewalks were lined with on-lookers, who expressed a good deal of gratification at the certainty of having one fire engine which no horse disease could disable.



THE AMOSKEAG SELF-PROPELLING STEAM FIRE ENGINE.

The machine is not, however, an outgrowth of the late distemper among the horses. The first one made was designed for the city of New Orleans, or some company there, and was used in pumping out steamboats along the river bank. Its success was so great that others were made, and, according to the telegrams, two were hurried on to aid in putting out the fire in Boston. A test of this New York machine's powers was made on Thursday. It is well known that the high French roofs are thought to have aided the progress of the flames both in Chicago and New York, and the Chief Engineer was anxious to ascertain the ability of the engine in throwing to the roof of some of our high buildings. The highest, or one of the highest structures in New York, is the Equitable Life Insurance Building, and the engine ran down there. The circumstances were not in favor of the engine, as the water at the hydrant had but seven pounds pressure. Fifteen lengths of rubber hose of 2½ inches in diameter, inside measurement, were stretched a distance of 750 feet to the top of the cupola of the Equitable Insurance Building, at Broadway and Cedar street, at an altitude of 116 feet from the sidewalk. Through this great length of hose, to which was attached a pipe of 1¼ inches diameter, an effective stream of water was projected to a height of about 150 feet above the top of the cupola, or 266 feet above the surface of the street. The greatest pressure of steam upon the boiler of the engine indicated during the test was 100 pounds to the square inch, and the extreme water pressure upon the hose was

190 pounds to the square inch. Several trials through the same and less quantities of hose, with the pipe in the street, were made subsequently, copious streams being thrown vertically from the street to the tops of surrounding buildings, which were also completely drenched at great distances by oblique and horizontal streams. The boiler of the engine is of sufficient strength to withstand a steam pressure of 140 pounds to the square inch, but it was not deemed necessary to make a test under such high pressure. This trial sufficiently demonstrated the ability of the machine to throw cold water on any roof in the city in still weather.

The propelling gear is thrown out of action while the machine is at a stand-still, by simply dropping a pin through the links of the driving chain. The steering gear has a different and better arrangement than in the old engines. A chain wound around two drums, placed on the forward axle close to the wheels, is also wound around the shaft of a steering wheel, and the whole apparatus is worked like an ordinary railway brake. It operates in the best manner, and the driver has complete control of the engine's course. Altogether, the Amoskeag Company have produced a very necessary and useful machine, and cities will probably conclude that it is absolutely necessary to have a certain proportion of these self-propellers in their service.

The catalogue of the company gives us an insight into the extent of the fire engine business. From August, 1859, to February, 1870, or in ten and a half years, it sold 337 steam fire engines; [the number being now more than thirty a year. New York alone has 47 engines.

Recording the Blows of the Steam Hammer.

We are informed by Mr. Coleman Sellers, that recently having occasion to count the blows of a rapid striking steam hammer, which was thought to be making three hundred blows per minute, three careful observers, counting the blows at the same time, made a variation of from 275 to 325 in the same count. Believing that such observation could not be relied upon, he connected a recording telegraph instrument to the machine, placing two keys in the circuit. One key was closed by each blow of the hammer, a wire from it being attached to a rock shaft in the valve motions; the other key to be closed by hand. When the hand key was closed, dots were recorded on the paper ribbon, one dot to each blow of the hammer; and by keeping the hand key closed any definite time, a row of dots, equivalent to the number of strikes in that time, were recorded, which dots could be counted afterwards at leisure. Many experiments were tried with this apparatus attached, and, as a rule, it was found that most persons who attempted to count when the speed was near 300 blows per minute, over counted rather than under counted. Very seldom did the count of any observer tally with the count of the instrument.—*Journal of Franklin Institute.*

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The dues for the year ending May, 1873, are now payable. All members and Associates who have not paid their dues are requested to do so at once, by sending in postal orders, or checks, or money, ten dollars to the Secretary.

All members and Associates who pay their dues for each current year, strictly in advance, will have sent to their address, regularly and weekly, the ENGINEERING AND MINING JOURNAL, which is the organ of the Institute, and will contain the proceedings and transactions, and all important papers read before the Institute and all notices of meetings. Back numbers cannot, as a general rule, be sent.

II. It is expected that the more important papers read before the Institute, and the debates thereon, will be published in annual or occasional volumes to which those Members and Associates will be entitled who have paid their dues.

III. All authors of papers are requested to notify the Secretary in advance of the meetings, giving the subject and length of their papers. Attention is also called, in this connection, to Rules 12 and 13.

IV. The ninth rule has been amended, so that there will be hereafter three meetings a year, in February, May and October.

Wilkesbarre, Pa. MARTIN CORYELL, Secretary.

American Institute of Mining Engineers.

PITTSBURGH MEETING.

SECOND SESSION, THURSDAY MORNING,* OCTOBER 17.

Continued from Page 307.

Mr. J. W. HARDEN of Philadelphia then read a paper on

THE LONGWALL SYSTEM OF COAL MINING.

This paper will be published in full in our columns hereafter. It sketched the history and successive forms of the longwall system as practised in the thin seams of England, during the last hundred years.

Mr. J. S. ALEXANDER—The system of extraction in the block coal fields of Indiana is undercutting, and wedging the coal down, no powder is used. The roof is a shale which falls when the props are taken out. A good many of our coal-seams do not maintain a regular dip. I should like to know whether longwall would be applicable to our circumstances.

Mr. HARDEN—The roof need not trouble you, if it does not contain "saddle-backs," or large masses which come down suddenly and cannot be controlled as to the extent of the break. Take care of the roof close to the face of the work, and allow all the rest to come down.

Mr. ALEXANDER—We have, more frequently than the mines in the Pittsburgh seam, "pinches," or places where the top comes down, cutting off the coal completely. These places are often 10 or 12 feet through.

Mr. HARDEN—It is better to go around them if possible, and take no further note of them. Cutting through is expensive.

The PRESIDENT said the problem was to keep up the roof while the coal is being extracted, and to have it fall as soon as possible afterwards. The question of timber supports is an important one, economically; as the cost of timbering may be in some cases decisive against longwall. Iron props have been used in some of the German mines, and are said to be economical because they can be repeatedly withdrawn, and used again, without being crushed or worn out. They should be protected against the corroding mine-waters.

The Institute then adjourned to 3 P. M.

THIRD SESSION—THURSDAY AFTERNOON, OCTOBER 17.

After the usual preliminary business, Mr. FRANK FIRMSTONE, of Glendon, Pennsylvania, read the following paper:

A COMPARISON BETWEEN CERTAIN ENGLISH AND CERTAIN AMERICAN BLAST FURNACES, AS TO THEIR CAPACITY, BY MEASUREMENT AND THEIR CAPACITY BY WEIGHT.

In "Chemical Phenomena of Iron Smelting," Mr. BELL gives the weight of materials required to fill furnaces of various sizes at the Clarence Works; as this differs very much from the weight required for furnaces at Glendon, where anthracite and magnetic and brown iron ores are used a comparison is interesting.

Taking furnaces at Glendon of 4800 and 11,900 cubic feet capacity and comparing them with the Clarence furnaces of 6000 cubic feet and 11,500 cubic feet, we find that the 4800 cubic feet at Glendon and the 6000 cubic feet at Clarence required respectively

Glendon 4800 *cubic feet.*		*Clarence* 6000 *cubic feet.*	
Coal	93·2	Coke	55·7
Ore (½ brown)	57·2	Ironstone (calc'd)	28·3
Limestone	28·8	Burnt lime	10.85
Cinder	26		
Total	195·2	Total	94·85

Comparing the 11,900 Glendon with the 11,500 Clarence we have.

Glendon 11,900 *cubic feet.*		*Clarence* 11,500 *cubic feet.*	
Coal	213·2	Coke	119
Ore (½ brown)	165·2	Ironstone (calc'd)	99·3
Limestone	82	Limestone	35·9
Cinder	42·4		
	502·8		254·2

*The report of last week was headed, by mistake, "Thursday Afternoon." It was properly a continuation of the Thursday morning session.

The weight of material per cubic foot is:

	Cubic ft.	*Tons.*	*Cwt.*	*Lbs.*
Glendon	4,800	·041	·82	91·84
"	11,900	·042	·84	94·28
Clarence	6,000	·016	·32	35·84
"	11,500	·022	·44	49·28

The weight of a cubic foot of material at Glendon, therefore, is about double that of a cubic foot at the Clarence Works, and furnaces of equal capacity at the former will hold double the weight required at the latter.

The pressure of the column of materials in the furnace on the lower layers, will be, for equal heights, in proportion to its weight per cubic foot.

The 11,900 cwt. furnace at Glendon therefore, which is 72 feet high, is in that respect under the same conditions as a Cleveland furnace 144 feet high, and furnaces 50 feet high are the same as the highest coke furnaces that have ever been built.

Looking at the much greater weight of stock under treatment in the Glendon furnaces, it might be supposed that the limit to a profitable increase in size would be sooner reached in them than in the English furnaces, for the difference in the specific heat of the two classes of material must be too small to appreciatively affect the great difference in heat-absorbing powers due to the difference in weight per cubic foot.

On this point we cannot yet speak positively. The large furnace at Glendon works with a consumption of coal less, by from 3 to 4 cwt. per ton of iron, than that of the old furnaces of about 5,000 cubic feet capacity and 50 feet high, the temperature of blast being about the same at all of them; while at Stanhope, N. J., of the two furnaces of the Musconelcong Iron Co., which use only magnetic ore, one 80 feet high, and containing 16,400 cubic ft., uses several cwt. less coal per ton of iron than the other, which is 55 feet high and contains 9,200 cubic feet.

The above numbers of course apply only to furnaces as filled and ready to start; could we know the weights when actually at work under full burden, the difference would probably be greater. They seem to show, however, that anthracite furnaces may be worked successfully when the pressure of the column of materials is as great as it would be in a Cleveland furnace 144 feet high, and that a given increase of height and capacity in the one case has resulted in nearly the same saving of fuel as in the other, notwithstanding the much greater weight of stock contained in the anthracite furnaces.

After the reading of the paper, some desultory discussion ensued with regard to the economical limit of height in blast furnaces, and the danger of crushing the fuel by excessive burden. Reference was made to the charcoal furnace of Messrs. Witherbee & Co., in Essex County, N. Y., which runs successfully with a height of 65 feet. This furnace recently began a campaign on charcoal, and finished it on anthracite—the charcoal supply having failed. The charcoal iron continued to be produced without apparent disturbance of the furnace, down to the very moment when the anthracite iron began to come. Hence the charcoal charges must have carried without injury the entire column of the anthracite charges. The quantity of fuel (charcoal) consumed by this furnace per ton of iron produced, is about 19 cwt.

Mr. A. EILERS of New York presented a paper on

A NEW OCCURRENCE OF THE TELLURIDE OF GOLD AND SILVER.

The telluride of gold and silver, the "Tellurgoldsilver" of Hausmann and "Petzite" of other mineralogists, has been found in so few localities, that a late discovery of the mineral in a new locality may not be uninteresting.

So far this mineral has been found in Europe only in a few mines in Transylvania, and in Hungary; and in the United States in the Stanislaus Mine, in Calaveras Co., California, in the Golden Rule Mine, Tuolumne Co., California, and in a mine in Montana, the precise locality of which I have forgotten. The new locality referred to is at the Red Cloud Mine, Gold Hill District, Boulder Co., Colorado.

The district is an old one, and was at one time, as

long as the decomposed surface ores lasted, quite prosperous; but when the sulphurets of iron and copper were found in the veins, the stamp mill process was inadequate to the extraction of the gold, and the camp received a check from which it has not recovered to this day.

The country rock is the same as is found at Central and Georgetown, *i. e.* a granitic rock, which is sometimes a true granite, often a syenitic granite, and occasionally gneiss. In all cases the country rock is more or less altered in the immediate vicinity of the veins. The latter have all a N. E. and S. W. strike, but the dip varies from N. W. to vertical, and in some veins it is to the S. E.

In the mines formerly opened the minerals occurring in the quartz gangue are iron and copper pyrites, small quantities of galena and blende and native gold, but no tellurides have ever been found in any of them to my knowledge. In the Red Cloud, which was discovered in the early part of this summer, tellurium minerals are on the contrary of frequent occurrence; in fact they may be said to constitute half of the minerals found in the quartz.

When pieces of the "float" from this vein (for the outcrop was hidden by some ten or twelve feet of soil) were first brought to the Denver branch mint for assay, the enormous figures per ton obtained for the contents of gold and silver almost staggered the assayers. Subsequently five tons of surface rock were brought down to Mr. SCHIRMER'S sampling works, and it was here that I first saw the ore. In breaking open some of the pieces I found an undecomposed mineral, which I took for sylvanite (Ag, Au, Te3). As the shaft went down deeper, more and more undecomposed ore was found, and samples of the steel-gray, soft mineral, which was so rich in gold, were sent by Mr. SCHIRMER to Dr. F. GENTH of Philadelphia for analysis. This gentleman pronounced the mineral petzite, the formula for which is given by PETZ, from analyses made of European samples, as Au Te+4½ Ag Te, and by GENTH from analyses of American specimens, AuTe+ 3 AgTe, the composition of the mineral from the Golden Rule Mine being, according to the latter authority, Te 34·16, Ag 40·87, Au 24·97; and of another specimen, Te 32·68, Ag 41·86, Au 25·60. No analysis of the mineral from the Red Cloud Mine has yet been published, but I understand from Mr. SCHIRMER that Dr. GENTH is engaged in making one. Some hasty blowpipe experiments, which I found time to make at Denver, proved the presence of tellurium and a large quantity of gold and silver.

To the presence of this rich telluride rather than to the occasional occurrence of native gold in the ore of the Red Cloud is due its high value. The gangue is not pure quartz, but a mixture of quartz, and half decomposed felspar on one side of the vein, (which stands very nearly vertical,) and of dark quartz on the other. In the former gangue the telluride occurs principally, while in the latter, iron pyrites, sometimes mixed with small quantities of galena and copper pyrites, predominates. All these minerals are, however, very much distributed through the gangue, so that, in case the ore were to be beneficiated by smelting, it ought to be first concentrated. But as this would undoubtedly cause large losses on account of the peculiar way in which petzite breaks up in stamping, (namely, into thin flakes, the finest of which are carried off by water, the same as certain silver minerals and native gold,) a dressing process will probably have to be avoided. It is reported that extremely solid iron pyrites, carrying some $20 to the ton in gold, is found a few miles off in a neighboring district. If this is so, the most complete and probably also the cheapest way of extracting the gold and silver from the Red Cloud ore will be smelting this ore with roasted iron pyrites to a matte, in order to remove the quartz, and then concentrating the matte after roasting it to the degree required.

The shaft was at the time of my visit to the mine 80 feet deep, and a few feet had been drifted on the vein on both sides of the shaft. The vein was in the shaft 6 feet wide, but the mineral contracted in the drift towards the N. E. to less than two feet in a distance of not more than 12 feet, the remainder of the vein being filled with a greenish blue argillaceous material. Work is energetically prosecuted to open up the mine. So far one lot of 5 tons of surface ore had been shipped, assaying $200 per ton in gold and silver. A second lot of first class, undecomposed ore, 6 tons, yielded $400 per ton, and a third lot of 5 tons of first class ore was ready for shipment, its value being not yet determined. Besides, there were on the dumps some 70 tons of second class ore, the value of which was not known. But as there was much of the telluride visible in it, it will probably not fall below $75 per ton.

Finally, to point out the enormous influence which the occurrence of this telluride must exert towards raising the average value of the ore from the whole vein, I will append here the assays from 10 samples, as transmitted to me from the Denver branch mint.

"The following is an abstract of some assays of Red Cloud ore as requested in your note of this morning, viz.:

1. Blossom or Float Ore.	Gold	$1,416 51	per ton.
" "	Silver	320 37	"
	Total	$1,736 88	
2. Surface Ore.	Gold	$19,652 62	per ton.
" "	Silver	2,282 40	"
	Total	$21,935 02	
3. At depth of 10 feet.	Gold	$16,638 31	(some Petzite.)
"	Silver	9,304 00	
	Total	$25,942 31	per ton.
4. At depth of 14 feet.	Gold	$538 37	
" "	Silver	202 17	
	Total	$740 54	per ton.
5. At depth of 19 feet.	Gold	$126 15	(Sulphuret of Iron.)
"	Silver	41 72	
	Total	$167 87	per ton.
6. At depth of 25 feet.	Gold	$5,663 68	(Containing Petzite.)
"	Silver	2,851 16	
	Total	$8,517 84	per ton.
7. At depth of 30 feet.	Gold	$4,220 19	(Containing Petzite.)
"	Silver	3,040 37	
	Total	$7,260 56	per ton.
8. At depth of 35 feet.	Gold	$5,360 14	(Containing Petzite.)
"	Silver	4,258 22	
	Total	$9,618 36	per ton.
9. At depth of 42 feet.	Gold	$3,840 51	(Containing Petzite.)
"	Silver	2,510 30	
	Total	$6,350 81	per ton.
10. At depth of 50 feet.	Gold	$7,240 25	(Containing Petzite.)
"	Silver	3,425 61	
	Total	$10,665 86	per ton.

Yours truly
J. F. SCHIRMER."

As shipments continue to be made regularly of first-class ore, we shall soon know how high its average value really is. Meanwhile it is significant that 16 tons of first-class ore have so far been obtained to only 70 tons of second-class, or one ton to 4¾ tons; while the usual proportion in the Central City gold ores in the richest mines is one ton of first-class rock to 10 of second class.

The discoverers of the mine are two poor miners, who have for years "stuck to" the almost deserted camp of Gold Hill, and who seem to be now in a fair way of being rewarded for their patience and endurance.

The Loss of Carbon in Coal and Coke by Exposure.*

BY PROF. JOHN W. LANGLEY,
of the Western University, Pittsburgh, Pa.*

The question whether a given fuel will suffer waste by exposure to the air, appears to me to be dependent on the combustibility (or igniting temperature) of the substance. Experiments first performed by Herr GRUNDMANN at Tarnowitz, in Germany, have proved conclusively that an exposure of bituminous coal in heaps to the action of the weather, for a period varying from two weeks to a year, results in a large percentage of loss.

This loss is in the nature of a slow or incomplete combustion; it is greater and more rapid in large heaps than in small, and is also favored by the greater or less state of subdivision of the coal, large fragments losing proportionately less than small ones.

The total diminution of weight of coal so exposed ranges from twenty-five to forty per cent. in eight months, and the chief portion of this action takes place within the first three weeks after mining. The chemical nature of this waste has been investigated by VARRENTRAPP, of Brunswick, Germany, and by others, and the method of proof was as follows:

A quantity of pulverized coal was placed in a tight vessel, through which a current of air could be drawn. The vessel and air were brought to a temperature of 280° Fahr., and the air, after passing through the apparatus, was caused to bubble through certain chemical solutions which have the property of retaining and rendering visible carbonic acid. The substance used was a solution of baryta. Under these circumstances the carbon of the coal was ultimately removed by the chemical solution from the air as carbonic acid, showing conclusively that a true combustion had taken place.

The combustion is so complete that in three months nothing but ash is said to remain. This, however, occurs at 280° Fahr.; at lower temperatures the process goes on much more slowly.

I have found, in experimenting on our Pittsburgh coals, that they suffer loss even when kept in porcelain dishes in the laboratory of the University, but that, if the surrounding air is *perfectly* dry, no appreciable loss takes place at ordinary temperatures; on the other hand, the air in its ordinary state contains moisture enough to cause the slow wasting of the fuel, and if the coal is kept wet the change is quite sensible. Still, I have in no case, operating on the small scale, found our native coal to suffer as much as the foreign experiments would indicate. This is probably due to a difference in the character of the fuel.

In the paper which has just been read, analyses have been quoted to show that coke loses no carbon by exposure; and the question has been asked why there should be a difference between it and coal. There is good reason for supposing that the carbon in coke is physically different from that in the raw fuel. It is well known that any carbonaceous body requires a temperature for its ignition, higher, in proportion to the degree of heat to which the fuel has been previously exposed; thus, coke and anthracite both require a higher initial temperature, and to be used in larger volumes for successful ignition and combustion.

I may draw an illustration from the domain of abstract science, and instance a point which I first observed three years ago, but which very probably is not original with myself.

A feeble current of electricity, as from a thermo-electric battery, will not be conducted by a fragment of anthracite; but if the lump is first heated red hot and then cooled, the current will flow through it readily.

Taking the well-known increasing series of the igniting points from bituminous coal, charcoal, anthracite coke, gas-carbon, plumbago to the diamond, and the somewhat parallel order of their conducting power for electricity, I think we should be justified

* Remarks made at the meeting of the American Institute of Mining Engineers, Oct. 18, 1872.

in assuming that the carbon of each of these is not physically or chemically exactly identical with that of its neighbor, and that *à priori* we might expect coal to enter into slow combustion but should not look for any such result in coke.

The Manufacture of Iron and Steel.

By EDWARD RILEY, F.C.S.

Continued from page 307.

Mr. Danks' machine consists of a revolving cylindrical chamber, made with longitudinal wedge-shaped recesses, which act mechanically in retaining the initial lining in its place. This initial lining may be composed of any ore free from silica, ground up and mixed with lime cream; it is put in like mortar, and, when dried, becomes a refractory and sufficiently coherent material to allow of the fettling being melted upon it, without melting itself or breaking away from the plates. It is advisable to use an anhydrous ore for mixing with the lime, as when a hydrate is used and the water of combination driven off, the mixture becomes rather crumbly.

Upon the initial lining a quantity of any ore free from silica is melted. For this purpose, ores containing water of combination, may be used, as it is soon driven off. Into the melted bath of ore, large solid lumps are thrown, and these being cold, cause the melted ore to set round them, and so fix them firmly, producing a rough internal lining, and thereby affording a greater amount of surface to act upon the iron. It is not only necessary that these lumps should be moderately free from silica and refractory, but also that their texture should be such that they do not crumble by heat; this was found to be the case with ilmenite.

Best tap cinder answers for this purpose very well, and when iron ores cannot be got free from cinder, there is no doubt that it will pay to oxidize iron-scrap. Mr. Danks uses scrap iron for this purpose.

The above description is taken from Mr. Snelus's report to the Iron and Steel Institute. In this report he enters fully into the various trials made with English pig iron, and the ores used for fettling in this country that were taken out to America for experiment.

Mr. Danks in his furnace uses a closed ash-pit, and supplies the necessary air with a fan-blast; he also introduces over the fire grate in front of the furnace and above the fuel, nine jets of air, so that the puddler in charge of the machine can regulate the blast, and thus he has complete control over the furnace, increasing the heat when required.

The furnace is a bad melter of pig iron, as it takes a long time and consumes much fuel in using the machine for melting. The pig should be melted in a cupola, or run direct from the blast furnace.

After melting the iron, a jet of water is directed against the lining on the descending side, in order to chill a portion of the cinder and to cause it to be carried under the iron. Mr. Snelus thinks this also has the effect of carrying off sulphur from the cinder, as in Parry's steam finery.

When grey pigs are used, it takes about ten minutes for the boil to commence; with white pig the time is much less, on account of the silicon present in the iron being less, and the boil commences in two minutes after melting. After tapping off the cinder, the cylinder is set revolving, and the fire is urged; the iron begins to boil violently, and the carbon quickly disappears. But little cinder is formed in this part of the process, and most of it is removed with the ball.

Mr. Danks has an ingenious arrangement consisting of a movable piece or door at the back of the flue; this, on removal, permits the ball to be withdrawn by means of a ball fork worked with a crane, by which the ball is placed on a bogie and carried to the squeezer or hammer.

In Mr. Danks' machine the puddling is effected entirely by the fettling he uses, the carbon, silicon, and phosphorus being oxidized almost entirely by it, and the cinder introduced. The conversion of pig iron into malleable iron by means of oxides of iron is a very old idea. Dr. Percy proposed it more than twenty years ago; it has been tried in the puddling furnace, but with only partial success, the difficulty always being to bring the iron ore into immediate contact with the molten pig; if used in an ordinary puddling furnace it would simply float on the top. The advantage of using pure oxides of iron and such a material as best tap for fettling a puddling furnace, I have before alluded to; the molten pig washes up against it, and you have in a limited degree the same action as in Danks' furnace.

The separation of silicon, sulphur, and phosphorus by Mr. Danks' puddling-machine is more perfect than by hand puddling. Mr. Snelus, in his paper alluded to, gives the analyses of the pig and puddle bar produced, and compares the latter with puddle bar made in the ordinary way, and Mr. Danks also makes the somewhat astounding assertion that the more silicon and phosphorus the pig contains, the better is the quality of iron produced, so that what we always considered our enemies are now to be our best friends in iron making; as far as our experience goes in machine puddling, this view of Mr. Danks seems to be a correct one.

Mr. Snelus, by an experiment made with silicon and oxide of iron, clearly proved that silicon does reduce oxide of iron to metallic iron, and that it becomes silica. The great advantage of machine-puddled iron will be uniformity of quality in the wrought iron made.

The impurities in the pig being oxidized at the expense of the fettling and cinder, it is clear that the oxides of iron must be converted into metallic iron, and consequently the yield is increased. Thus 21.602 lbs. of pig gave of puddle bar 23·112 lbs. Allowing 94 per cent. for the iron in the pig, then 1.652 lbs. of iron was reduced from the fettling.

The present machinery in use at iron works is quite unfitted for dealing with such a mass of iron as a ball from Danks' furnace. The charge used is 600 lbs., the puddle-ball would weigh about 650 lbs. Mr. Danks has invented a squeezer suitable for such masses of iron, consisting of an eccentric grooved roller, with two smaller ones, and a cam to tumble up the iron laterally.

Iron thus produced, after being thoroughly squeezed and re-heated, can be rolled out at once into a rail, or large bar, and will not require, as is the case at present, rolling into puddle-bar, piling, re-heating and rolling again.

Mr. Spencer, of the West Hartlepool Iron Works, has also invented a revolving puddling machine. The converter is of a rhomboidal form, on two of its opposite sides, having the axes at right angles to the ends or discs, the remaining two sides being parallel to the axis; the ends or discs are made to revolve on rollers by suitable gearing. The sides are fitted with honeycomb recesses to hold the fettling, the discs being honeycombed also for the same purpose.

The fettling used is best tap; it is fitted into the recesses, and fresh tap melted over it. In some experiments made by Mr. SPENCER, he found that the silicon and phosphorus were almost completely separated from some Cleveland pig containing over 2 per cent. of phosphorus, having this element reduced in the puddle-bar to less than ·10; some of this was probably due to the cinder in the puddle-bar.

Cold-Short Iron.—Iron made from ores containing much phosphorus is always cold-short; thus the character of the Cleveland iron is cold shortness. Cold-short iron is also produced when any siliceous material is used for fettling, sand or silica in any form seeming to make iron cold-short, so that generally phosphorus and silicon make iron cold-short.

Red-short.—The character of the Welsh iron, and hematite pig, is red-shortness; red-short iron is always made from ores that are deficient in phosphorus, a little phosphorus from such pigs as the Cleveland producing the best results when mixed with hematite pig, or the purer charcoal irons.

The red-short character of Welsh iron cannot be attributed to the absence of phosphorus; in many instances it is undoubtedly due to the presence of sulphur, although not always; iron may be both red-short and cold-short at the same time. Such iron is the worst possible iron, and is made from iron ores containing a high percentage of sulphur and phosphorus; thus I have found inferior black band, which, on analysis gave a high percentage of sulphur and phosphorus, affect materially the quality of the iron, and make it both cold-short and red-short. The exact cause of the production of red-short-iron is not always very clear. I believe it to be due in some cases to a deficiency of carbon in the wrought-iron; thus the best cable-bolt, the most fibrous and toughest iron, when melted in a clay crucible, and afterwards heated, doubled and welded, is very red-short, on account of the carbon being burnt out by the oxide of iron formed in melting the bar.

Burnt Iron.—Mr. MATTHIEW WILLIAMS considers that burnt iron is due to oxygen dissolved in the iron, or rather oxide of iron present in the iron.

I hardly think his experiments are sufficiently conclusive to prove this; he bases them entirely on the behavior of the iron, with dilute 1·20 nitric acid. Now oxide of iron does exist in iron, especially in plates, as cinder; frequently in badly-manufactured plates, it occurs in some quantities. How he can determine the difference between the oxide of iron due to the cinder and that which he considers to cause the burnt iron, I cannot see.

Mr. MATTHIEW WILLIAMS bases all his results on the determination of carbon by Eggertz's process. Now, is this process sufficiently trustworthy to determine minute differences in steel? I think not; that for practical purposes, when used with steel manufactured at the same works, it gives valuable comparative results, I quite agree; but with different steels made by different methods, although I have made most careful experiments, determining by combustion the carbon in my standards, I have been unable to get good practical results.

It would have been more satisfactory if Mr. WILLIAMS had first melted his wrought iron and proved that it contained no carbon by combustion; if, then, he had examined the iron after exposure to a high temperature in an oxidizing atmosphere, and then examined it and found oxide of iron, he would have had better grounds for his statement.

I have examined some of the first Bessemer iron made at Dowlais in 1865 by his method. Nearly the whole of the pig introduced in the experimental converter was burnt to cinder, and surely if burnt iron contained oxygen this iron should. I have failed to notice the dark color mentioned by Mr. WILLIAMS due to suspended oxide of iron during the dissolving of the iron in 1·20 nitric acid; the experiment has been repeated by my assistant with a like result.

I have also tried the same sample of melted wrought iron, upon which I made the experiment alluded to by Mr. WILLIAMS, and I have failed to obtain any dark color or any indications whatever of suspended oxide of iron, the color of the liquid being a very pale yellowish green; 2·8—2·7—2·5 grains were used in each case.

That burnt iron may absorb oxygen or some other gas when it has been heated to an excessively high temperature is quite possible; but I think it probable that burnt iron may be due simply to the particles or crystals of iron becoming sufficiently soft to arrange themselves in a highly crystalline form, and possibly some gas may remain between the interstices of the crystals. The best fibrous cable iron used for chains, if hammered vigorously for an hour, becomes highly crystalline and brittle, due to a re-arrangement of the particles of the iron; may not burnt iron be due to a similar cause?

By re-heating and re-rolling burnt iron, its crystalline character may in a great measure be converted into a moderately fibrous condition.

In considering the quality of wrought iron and steel, we should, I think, carefully consider the mechanical treatment it has been submitted to in conjunction with the chemical composition of the iron.

[TO BE CONTINUED.]

THE COAL TRADE.

NEW YORK, Nov. 15, 1872.

Anthracite.

The horse disease has at length seriously affected the coal business. Canal boats are laying up along the whole line of the canals, and whatever boats are taken through are drawn by steam-tugs pressed into the service. Only few come through even in that way. This state of things is peculiarly unfortunate at the close of the transportation season, and it is feared that the embarrassment from this cause will now continue nearly or quite up to the close of navigation. Very great difficulty is experienced, all along the line of the canals, to obtain line deliveries, and the impediment to business there must be really serious. The great centers of the trade suffer less, being all well supplied with railway transportation. Business in New York is fair, with prices about the same. The small coals are perhaps a little firmer, and the large sizes a little weaker. The Eastward trade is good. Transportation rates are advancing on all sides.

Bituminous Coal.

In this trade there is also a scarcity of supply for which the dealers have no explanation but that which serves with equal success as an excuse for conflagrations and commercial idleness—the horse disease. Whether that misfortune is passing in a "tidal wave" over Maryland is not fully known, but the trouble is reported to be at the mines and not in the routes of transportation. There is a scarcity of coal for the good reason that no coal is coming out of the mines. This is a new argument for employing the placid donkey in mining instead of the more delicate horse. Meanwhile there is a strong demand and but a moderate business done. Were it not for the new all rail route to Amboy the bituminous business would be nearly or quite suspended, but the new route together with the use of steam on the canal has saved the trade from complete suspension. Prices rule a little higher and Cumberland coal may be quoted in New York at $6.75.

Anthracite Coal Trade for 1871 and 1872.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending November 9, 1872, compared with the week ending Nov. 11, 1871.

COMPANIES.	1871. WEEK.	1871. TOTAL.	1872. WEEK.	1872. TOTAL.
*Phila & Reading R.R†..	139,821	4,936,013	130 220	5,087,894
*Schuylkill Canal	25,878	926,623	18,301	772,428
*Lehigh Valley R. R. ..	71,084	2,050,562	57 927	2,882,650
Lehigh & Sus. R. R.....	36,1.0	1,098,308	30,072	1,500,366
Lehigh Canal	30,0 9	670,243	21,490	725,167
Scranton North.....	17,742	475,828	24,606	697,719
" South	41 662	1,933,158	39,397	1,809,377
Penn. Coal Co., rail.....	25,147	638,260	27,304	1,054,289
" " canal....	485	13,723	118	2,997
Del. & Hud. Canal Co....	37,473	913,787	32,626	1,329,537
" " East..	10,722	292,747	7,341	485,220
" " West..	2,805	99,933	11,675	366,872
" " South.	11,127	282,346	9,047	338,027
Shamokin.....	12,686	559,898	14,161	496,563
Trevorton.....	....	.....	....	....
Lykens Valley Coal Co....	2,003	82,734	..	2,085
Wyoming North.....	....	.....	....	....
Wyoming South.....	....	.....	....	....
P. N. Y. C. & R. R. Co..	....	104,987	12,349	551,640
Williamstown Col'y.....	....	.....	....	....
Big Lick Col...	3,198	129,033	.....	10,591
Total..	468,112	14,308,369	432,679	18,086,912
1870.....	432,699			14,308,369
Increase	...			3,777,543
Decrease.....	35,503			

* These figures are for the week and fiscal period commencing Nov. 30.

† Less coal transported for Company's use and Bituminous coal.

Bituminous Coal Trade, 1871 and 1872.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Nov. 9, 1872, compared with week ending November 11, 1871.

COMPANIES.	1871. Week.	1871. Year.	1872 Week.	1872 Year.
C. & O. Canal.....	15,533	614,333	17 144	587,981
B. & O. R. R.....	24,996	1,072,757	28,841	1,088,449
H. & B. T. R. R.....	7,586	279,878	5,495	263,011
*Harrisburg & D.....	11,815	480,945	7,675	436,237
*L. V. R. R....	7,679	349,459	595	24,633
P. & N.Y.C. & R. Co.....	....	.....	5,142	320,764
Cumberl'd Branch Canal	4,692	180,187	4 319	194 159
" Railroad....	1,496	61,619	866	20,274
Total.....	73,797	3,039,178	70,107	2,935 508
	70,107	2,935,508		
Decrease.....	3,690	103,670		
Increase				

Northern Central Railway, Shamokin Division.

Below is the return of Coal sent over the Shamokin Division of the N. C. R. W., for the week ending November 9, 1872.

	Tons.	Cwt.
East.....	767	07
West.....	13,393	06
		14,160 13
Same time last year.....		12,685 11
Increase.....		1,475 02
Decrease.....		.....
Total amount shipped to date.....		496,563 09
Same time last year.....		559,898 04
Increase.....		.....
Decrease.....		63,334 15

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending Nov. 9, 1872, with totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons.	WEEK. Cwt.	TOTAL Tons.	TOTAL Cwt.
Total Wyoming.....	9,715	04	483,367	06
" Hazleton.....	44,529	07	2,081,236	10
" Upper Lehigh.....	66	06	2,904	15
" Beaver Meadow.....	14,737	04	725,952	12
" Mahanoy.....	8,009	18	359,424	11
" Mauch Chunk.....	37	01	2,587	12
Total.....	77,095	00	3,655,473	06
Same time last year.....	94,220	13	2,568,660	15
Increase.....			1,086,812	12
Decrease.....	17,125	13		
Forwarded East from Mauch Chunk by rail.....	57,977	03	2,852,630	00
Same time last year.....	71,083	15	2,050 561	11
Increase.....			802,068	09
Decrease.....	13,156	12		
DISTRIBUTED AS FOLLOWS.				
Forwarded East from Mauch Chunk by rail.....	56,720	06	2,809,128	19
do East for use L. V. R. R.....	1,256	17	43,501	01
Delivered at and above Mauch Chunk for use of L. V. R.R.....	968	10	53,803	09
To P. & N. Y. R. R.....	7,023	16	337,587	01
To N. C. R. R., at Mount Carmel.....	508	04	2,664	09
To D. H. & W. R. R.....	1,050	05	28,244	13
To L. & S. R. R. at Packerton for rail....	562	09	12 650	05
Delivered at M'h Chunk.....	171	01	2,120	04
Delivered on line of road above Mauch Chunk.....	259	00	14,922	13
To L. S. & R. R., at Penn Hav., for railroad			4,011	19
Do. for canal	6,476	10	221.005	00
To Lehigh Canal Mauch Chunk.....	2.148	02	116,270	09
To Catawissa Railroad.....			9,663	04
Total.....	77,095	00	3 655,473	06

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday Nov. 9. and during the year 1872, compared with the corresponding period of 1871.

WEEK.

	To C. & O. Canal Tons. Cwt.	To B. & O. R. R. C. Tons. Cwt	Total. Tons Cwt.
1872.....	17,143 18	28,940 14	45.984 12
1871.....	15,533 10	24,995 17	40,529 07
Increase.....	1,610 08	3,944 17	5,455 05
Decrease.....		.....	

YEAR.

1872.....	587,981 02	1,088,448 13	1,678,429 15
1871.....	614,332 19	1,072,757 09	1,687,090 08
Increase.....	.....	15,691 04	
Decrease.....	26,351 17		10,660 13

Cumberland Branch R. R.

WEEK.

	To C. & O. Canal. Tons. Cwt.	To B. & O. R. R. Co Tons. Cwt.	Total. Tons. Cwt.
1872.....	4,349 06	865 11	5,214 17
1871.....	4,692 08	1,495 14	6,188 02
Increase.....	.....	.....	.....
Decrease.....	343 02	630 03	973 05

YEAR.

1872.....	194,158 16	20,274 09	214,433 05
1871.....	181,186 14	61,619 02	241,805 16
Increase	12,972 02		
Decrease		41,344 13	27,372 11

Lehigh Coal and Navigation Company,

Report of Coal transported over the Lehigh Canal and L. & S. Div of Central Railroad of New Jersey for the week ending Nov. 9, 1872, and for the year 1872.

	WEEK.	YEAR.
Forwarded East of M'ch Chunk by Rail	30,071 11	1,500,365 17
Delivered at and above do., ...	1,286 09	53,803 01
Forwarded East of do., by Canal	21,489 12	725 066 11
	52,847 12	2,279,235 09
Corresponding period last year—		
Forwarded East of M. Chunk by Rail..	32,120 07	1,093,398 03
Delivered at and above do., ..	1,800 00	58,135 16
Forwarded East of do., by Canal	33,068 19	670,242 15
	67,989 06	1,826,776 14
Increase on Railroad.....	.....	397,634 19
Decrease " "	6,562 07	
Increase on Canal.....	.....	54,823 16
Decrease " "	8,579 07	

Of the above there was transported on account of—

Lehigh Coal Nav. Co.....	17,608 15	805,631 11
Wilkesbarre Coal & Iron Co.....	18,223 07	860,804 17
	35,832 02	1,666,496 08
Corresponding period last year—		
Lehigh Coal & Nav. Co	21,527 04	526,316 08
Wilkesbarre Coal & Iron Co.....	22,277 00	747,755 19
	43,804 04	1,274,072 07
Increase.....	7,972 02	392,424 01
Decrease.....	.....	.....

Lehigh Canal Coal Trade.

Shipped for the week ending November 8, 1872.

	Week. Tons. Cwt.	Week. Tons. Cwt.
Total from Mauch Chunk Region	5,202 15	228.706 01
" " Hazardville "	1,991 19	[illegible] 18
" " Beaver Meadow "	2,815 05	[illegible] 03
" " Mahanoy "	94 10	[illegible] 08
" " Hazleton "	6,476 10	220,538 13
" " Upper Lehigh "	1,156 15	27,432 11
" " Wyoming "	3,758 08	84,021 19
" " do do Hazardville	893 10	2,474 18
Total	21,489 12	725 066 11
Corresponding week last year	30,068 19	670,242 15
Increase	.....	54,823 16
Decrease	8,579 07	

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, Nov. 9, 1872.

BY RAILROAD.—ANTHRACITE.

PASSING OVER MAIN LINE AND LEH. VAL. BRANCH.

	Tons.	Cwt.
From St. Clair. - - - - - - - - - -	30,336	00
" Port Carbon. - - - - - - - - - -	5,835	02
" Pottsville. - - - - - - - - - -	2,171	15
" Schuylkill Haven. - - - - - - - - - -	22,538	15
" Pine Grove. - - - - - - - - - -	5,463	07
" Tamaqua. - - - - - - - - - -	16,009	16
" Harrisburg. - - - - - - - - - -	22	07
" Dauphin. - - - - - - - - - -	5,125	12
Total - - - - - - - - - -	87,502	14

FOR SHIPMENT BY CANAL.

Passing Frackville Scales - - - - - - - -	8,094	05
" Mill Creek " - - - - - - - -	2,107	15
" Schuylkill Valley Scales - - - - - - - -	635	14
" Mt. Carbon " - - - - - - - -	1,282	15
" Cressona " - - - - - - - -	9,081	18
" Pine Grove " - - - - - - - -		
" Tamaqua " - - - - - - - -	1,441	09
Total - - - - - - - - - -	22,553	16

SHIPPED WESTWARD VIA CATAWISSA AND WILLIAMSPORT BRANCH AND NORTHERN CENTRAL RAILROAD.

Via Catawissa & Williamsport Br. - - - - - - - -	400	03
" N. C. R. R. passing Locust Gap. - - - - - - - -	2,125	08
" " " Shamokin. - - - - - - - -	6,180	04
" " " Herndon. - - - - - - - -	....	
Total - - - - - - - - - -	8,705	15

SHIPPED WEST OR SOUTH FROM PINE GROVE.

Via Schuylkill & Susquehanna R. R. - - - - - - - -	1923	06
" Lebanon & Pine Grove Branch - - - - - - - -	699	14
Total - - - - - - - - - -	1,923	00

CONSUMED ON LATERALS.

From Frackville Scales. - - - - - - - -	299	17
" Mill Creek " - - - - - - - -	993	17
" Schuylkill Valley Scales. - - - - - - - -	1,176	11
" Mt. Carbon " - - - - - - - -	1,157	13
" Cressona " - - - - - - - -	722	06
" Pine Grove " - - - - - - - -	83	18
" Tamaqua " - - - - - - - -	508	00
Total - - - - - - - - - -	4,542	02

LEHIGH AND WYOMING COAL.

Received via Silverbrook Junction, Sent East - -	4,224	10
Cat. & Wpt. Br. Sent West - -	24	16
" " Rupert, Cat. & Wpt. Br. - - -	9	19
" " Allentown, E. Penn'a Br. - - -	165	03
" " Alburtis, " " - - - -	25	05
" " Oreland, G. & N. Br. - - - -	544	06
" " Connecting R. R. - - - -	.....	
" " Willow Street R. R. - - - -	298	11
Total - - - - - - - - - -	5,292	10

BITUMINOUS.

From Harrisburg. - - - - - - - - - -	7,645	00
" Connecting R. R., G. & N. Br. - - - - - - - - - -		
" Junction R. R. - - - - - - - - - -	230	00
Total - - - - - - - - - -	7,675	00

COAL FOR COMPANY'S USE.

Anthracite - - - - - - - - - -	6,174	04
Bituminous - - - - - - - - - -	166	05
Total. - - - - - - - - - -	6,340	09

RECAPITULATION.

	Total for Week.	Corresp'g week last year.	Increase and Decrease.
Passing over Main Line and Leh. Val. Branch - - -	87,502 14	96,422 15	d 8,920 01
For Shipment by Canal - -	22,553 16	28,021 14	d 5,467 18
Shipped Westward via Northern Central R. R. - - -	8,705 15	5,478 10	i 3,227 05
Shipped West or South from Pine Grove - - - -	1,623 00	3,696 19	d 2,073 19
Consumed on Laterals - -	4,542 02	4,260 15	i 281 07
Lehigh and Wyoming Coal -	52,92 12	1,940 16	i 3,351 14
Total Anthracite paying freig't	130,219 17	139,821 09	d 9,601 12
Bituminous - - - -	7,675 00	11,915 04	d 4,140 04
Total of all kinds paying freig't	137,894 17	151,636 13	d 13.741 16
Coal for Company's use - -	6,340 09	5,960 05	i 380 04
Total Tonnage for Week - -	144,235 06	157,596 18	d 13,361 12
Previously this year - -	5644894 15	5471613 00	i 173,281 15
Total to date - - - -	5789130 01	5629190 18	i 159,930 03

SHIPPED BY CANAL.

From Schuylkill Haven - -	17,391 10	24,475 10	d 7,083 00
" Port Clinton - - -	908 09	2,230 09	d 1,322 00
Total Tonnage per Week - -	18,301 10	26,705 19	d 8,404 00
Previously this year - -	754,126 10	[illegible]909,835 16	d 155,709 06
Total to date - - - -	772,428 00	936,541 06	d 164,113 06

Report of Coal Transported over Central R.R. of N. J. (Lehigh and Susq. Div.)

Week ending November 9—Compared with same time last year.

WHERE SHIPPED FROM	WEEK 1872., tons ct.	WEEK 1871, tons ct.	YEAR 1872 tons cwt.	YEAR 1871, tons.cwt.
Wyoming Region . .	31255 19	36614 16	1304596 09	1119516 04
Upper Lehigh Region .	4090 16	4036 17	175691 14	88076 03
Hazleton Region . . .	6828 01	9367 15	229777 16	191118 02
Beaver Meadow Region	4091 10	2947 10	141742 12	68422 05
Mauch Chunk Region .	2688 18	6156 08	383494 08	191447 06
Treadow Region.....				
Mahanoy Region . . .				
Totals . . .	54355 07	59103 06	2235502 19	1654580 00
Increase . .	4747 19		580922 19	
Decrease . . .				
DISTRIBUTION.				
Forwarded East of Mch Chunk by Rail . .	30071 11	36120 07	1500365 17	1093398 03
Forwarded East of Mch Chunk by Canal. . .	17148 08	17354 09	469627 16	382760 07
Delivered at and above Mauch Chunk . .	1286 09	1800 10	53803 01	58135 16
Delivered to L. & B. R. R.at Plymouth Bridge	211 13	338 14	12806 09	27305 09
Totals . . .	5637 06	3459 16	126899 16	87980 05
Of the above there was transported on acc'nt of L. C. & N. Co.....	12408 01	10966 06	576985 10	284641 04
W.-B. C. & L. Co.....	18223 07	22277 00	860404 17	747755 19
Tota's	30629 07	32943 06	1437390 07	1032397 03
Increase			405393 04	
Decrease	2313 19			

Penn. and N. Y. R. R.—Coxton, Pa.

Coal tonnage for week ending November 9, 1872.

	Week. Tons.	Cwt.	Total. Tons.	Cwt.
Anthracite received:				
From Lehigh Valley R. R.	6,947	07	337,510	12
" Lack. & B. R. R.	1,221	17	70,923	14
" Pleasant Valley R. R.	3,164	16	94,970	14
" Sul. & Erie R. R.	1,014	16	48,234	16
Total	12,348	16	551,639	16
Distributed:				
To Lehigh Valley R. R.	1,084	07	35,718	05
To Lack. & B. R. R.	....		1,067	19
To S. Central R. R.	2,633	06	105,876	11
To Ithaca & A. R. R.	2,114	15	85,085	11
To Erie R. W. Pockets for shipm't.	3,846	03	244,244	00
To individuals on line of road	878	10	21,897	01
To points at & above Coxton for use of Co.	736	14	22,424	16
To points between Waverley and Elmira	1,055	01	35,325	13
Total	12,348	16	551,639	16
Bituminous received from BARCLAY R. R.				
Shipped north from Towanda	5,019	07	318,214	05
Shipped south from Towanda	....		2,172	12
Northern Central R. R.	93	02	377	12
Total	5,142	09	320,764	09
Distributed:				
To Erie Railway	4,827	08	286,882	01
To So. Central R. R.	221	19	31,070	01
To Ithaca Valley R. R.	....		120	03
Lehigh Valley, R. R.	93	02	1,201	01
To individuals on line of Railroad.	.....		1,203	12
To points on line of road for use of Company	.....		280	11
Total	5,142	09	320,764	09
Grand totals transported:				
Anthracite	12,348	16	551,639	16
Bituminous	5,142	09	320,764	09
Total	17,491	05	872,404	05

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, November 9, 1872.

	WEEK.	SEASON.
North	53,778 00	2,240,958 08
South	9,047 08	338,026 14
Total 1872	62,825 08	2,578,985 02
Corresponding time in 1871:		
North	56,616 00	1,334,987 10
South	11,126 16	282,346 04
Total	67,742 16	1,617,333 14
Increase North		
Decrease North		
Increase South		
Decrease South		
Total increase 1872		961,651 08
Decrease	4,917 08	

Delaware and Hudson Canal Company.

The following is a statement of Coal Transported by the Delaware and Hudson Canal Co. for the week ending Nov. 9, 1872.

	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	32,626	1,929,537
By Railroad, East	7,321	485,230
" " West	11,675	366,872
" " South	9,047	338,027
Total Tons	60,669	2,519,666
For the same period last year.		
	FOR THE WEEK.	FOR THE SEASON.
By Delaware and Hudson Canal,	37,473	913,787
By Railroad, East,	10,722	292,747
" " West	2,805	99,993
" " South	11,127	282,346
Total Tons	62,127	1,588,873
Increase	930,793	

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna, & Western Railroad for the week ending Saturday, Nov. 9, 1872.

	WEEK. Tons.	Cwt.	YEAR. Tons.	Cwt.
Shipped North	20,005	11	697,319	01
Shipped South	39,392	03	1,809,376	19
Total	59,397	14	2,506,696	00
For the Corresponding time last Year:				
Shipped North	17,742	03	475,828	08
Shipped South	41,661	13	1,033,158	00
Total	59,403	16	1,508,986	08
Increase			997,709	12
Decrease	6	02		

Schuylkill Canal.

Report of coal transported over the Schuylkill Canal for the week ending Saturday, November 9, 1872.

	Tons.	Cwt.
From Schuylkill Haven	17,393	10
" Port Clinton	903	01
Total for week	18,201	10
Previously this year	754,126	10
Total	772,423	00
To same time last year	926,622	16

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending November 9, 1872.

	1872. WEEK.	YEAR.	1871. WEEK.	YEAR.
By Railway	27,904 08	1,054,288 19	25,146 18	638,260 05
" Canal	118 09	5,996 13	484 12	13,723 03
Total	28,022 17	1,060,285 12	25,631 10	651,983 08
Increase 1872.	402,302 04			

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

	AT NEW YORK. November 17. R. A.	W. A.	AT PHILADELPHIA. November 17. R. A.	W. A.
SCHUYLKILL.				
Lump	$— —	$— —	— —	
Steamer	— —	— —	— —	— —
Broken	— —	— —	— —	
Egg	5 25	4 75	— —	— —
Stove	5 50	5 00	— —	— —
Chestnut	4 25	—	— —	
Pea	— —	— —	— —	— —
LEHIGH.				
Lump, (along side)	5 35	—	— —	— —
Broken	4 60	— —	— —	— —
Egg	4 60	— —	— —	— —
Stove	4 85	— —	— —	— —
Chestnut	4 35	— —	— —	— —
Pea	— —	— —	— —	— —
SPECIAL COALS.				
Honey Brook, Le'h W. A.	4 00@5 00		— —	— —
Spring Mountain " "	— —@—		— —	— —
Sugar Creek " "	— —@—		— —	— —
Sugar Loaf " "	— —@—		— —	— —
Old Compy's " "	4 00@5 15		— —	— —
Room Run " "	4 00@4 50		— —	— —
McNeal " "	— —		— —	— —
Girardville " "	— —		— —	— —
Hill & Harris " "	— —		3 10@4 00	—
Shamokin " "	— —		— —	— —
Lykens Valley " "	— —		— —	— —
Broad Top " "	— —		— —	— —
McMichael " "	— —		3 25@4 25	— —
Henry Clay " "	— —		— —	— —
Powelton " "	— —		— —	— —

Company Coals.

November, 1872.

	L.	Str.	Gra.	Eg.	Sto.	Chest
*Scranton at E. Port	3 45	3 45	3 65	3 70	4 00	3 50
*Pittston at Newburg	3 80	3 80	3 80	3 80	4 00	3 80
*Lackawana at Weehawken	4 01	4 10	4 10	4 30	4 00	3 60
Wilk'b're at Hoboken	3 60	3 65	3 85	3 85	4 60	4 10
Old Co. Lehigh at Pt. John'n	5 25	—	4 50	4 50	4 60	4 00
Lehigh at Eliz. Port	5 00	—	4 60	4 60	4 80	4 00

For freights to different points see "Freights."
To contractors only.

Prices at Baltimore—November, 1872.

Wholesale Prices to Trade.

Wilkesbarre, by cargo or car load	$5 35@5 60
Pittston and Plymouth, do	5 25@5 50
Shamokin Red or White Ash, do	5 50@5 75
Lykens Valley Red Ash, do	6 25@6 50
Zerba Valley	
Treverton	
By retail, all kinds per ton of 2,240 lbs	7 25@7 50
George's Creek and Cumberland f. o. b. at Locust Point for cargoes	@4 75
Fairmont and Clarksburg gas f. o. b. at L. Point	6 00
BITUMINOUS COALS.	
Kittaning Coal Co.'s Phœnix Vein, f. o. b. at Phila	$
Lemon " " "	
Cumberland Vein Coal	
Consolidation Coal Co.'s on board N. Y.	
Maryland Coal Co " "	

Prices at Georgetown, D.C., and Alexandria, Va.

November, 1872.

George's Creek and Cumberland f. o. b. for shipping (nominally.	$4 35@4 50

Prices at Havre de Grace, Md.

November, 1872.

Wilkesbarre and other White Ash for Cargoes	$ @4 75
Lykens Valley	@5 75
Shamokin Red or White Ash	5 00

Bituminous Coals (Cumberland).

Georgetown, F. o. b.	$4.25
Baltimore "	4.65
New York "	6.60

Prices of Gas Coals.

November, 1872.
PROVINCIAL.
Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N. Y.

	Coarse	Slack.
Block House	$2 00	$1 00
Gowrie	1 75	— 80

Vessels are being chartered at $4 25.
Corrected by Bird, Perkins & Job, 27 South street.

	Coarse.	Culm of Coal,
Pictou nett	$2 25	1 25
Sydney	2 25	- 80
Langan	1 75	- 80
Caledonia	1 75	- 80

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty on all slack coal or Culm: 40c. per ton of 28 bushels, 80 pounds to the bushel. On all bituminous coal or shale: 75 cents per ton of 28 bushels.

AMERICAN.

	Currency.
Westmoreland	$7 10 @— —
Fairmount Gas Coal Co. of N. Y.	7 00 @— —
Despard Coal Co	7 00 @— —
Penn	7 10 @— —
Newburg Orrel Gas	— — @— —
West Fairmount Gas Coal	7 00 @— —
AT PHILADELPHIA.	
Westmoreland	7 00 @— —

Prices of Foreign Coals.

November, 1872.
Duty 75 c. per ton.
Corrected weekly by ALFRED PARMELE, No. 32 Pine street, N. Y.

Liverpool Gas Caking	$ 8 00@— —
" " Cannel	12 00@13 00
" House	19 00@20 00
" Orrel	14 00@16 00
Per ton 2,240 lbs., ex-ship.	
PRICES FROM YARD.	
Liverpool House Orrel, screened	$16 00@18 00
"Cannel, "	19 00@23 00
Per ton 2,000 lbs. delivered.	

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven for consumption ($1 85 less 55c. drawback	$1 30
For reshipment	1 75

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 66
C. R. R., N. J., Phillipsburgh to Elizabethport	0 98
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$1 99

MAUCH CHUNK TO PORT JOHNSON.

L. V. R.R., or L. & S. R.R. from M. C. to Phillipsb'g	$0 66
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	0 98
Shipping expenses	25
Wharfage	
Total	$1 99

TO HOBOKEN.

L. V. R. R., Mauch Chunk to Phillipsburgh	66
Morris & Essex R. R. Phillipsburgh to Hoboken	0 98
Shipping expenses	25
Wharfage	
Total	$1 99

TO SOUTH AMBOY.

L. V. R. R.	66
B. & D. R. R.	98
Cam. & Am. R. R.	
Shipping Expenses	35
Total	$1 99

PENN HAVEN TO ELIZABETHPORT.

L. V. & R. R. Penn Haven to Phillipsburgh	0 70
C. RR. of N. J. Phillipsburgh to Elizabethport	0 98
Shipping expenses	25
Wharfage	10
Total	$1 99

Foreign and Provincial Freights.

November 1872.

Foreign.
Newcastle and Ports on Tyne, per keel of 21 1-5 tons £
Liverpool, 5 per cent primage

TO NEW YORK.

Provincial.

Sydney	$3 05
Lingan	3 50
Cow Bay	3 75
Port Caledonia	3 10
Little Glace Bay	3 00

TO BOSTON.

Sydney	3 00
Lingan	3 00
Cow Bay	3 00
Port Caledonia	3 00
Little Glace Bay	3 00

Freights.—November, 1872.

TO EASTERN PORTS.	Cumberland. From Georgetown.	From Baltimore	Anthracite. From Philadel'a.	From Elis. Port, Port Johnson, and Hoboken.	From Newburgh.	From Rondout.
Amesbury		2 75		2 20	2 45	2 50
Bangor		2 75				
Bath		2 80		2 25	2 45	2 55
Boston	3 25	2 40		1 90	1 25	1 25
Bridgeport	2 75			1 45	1 65	1 70
Bristol						
Cohasset Narrows	2 35			1 25	1 40	1 45
Derby						
Dighton	2 85			2 30	2 45	2 60
East Cambridge				1 45	1 65	1 70
Fall River	2 75	2 50				
Hackensack		3 00		1 65	1 85	1 90
Hartford				60	60	65
Hoboken	2 20			60	60	65
Jersey City	2 20					
Lynn				1 40	1 55	1 65
Middletown				1 35	1 50	1 65
Mystic		2 75		1 45	1 65	1 75
New Bedford	3 00	2 75		2 45	2 65	2 70
Newburyport	3 10	3 10		1 00	1 25	1 25
New Haven	2 75	2 40		1 30	1 45	1 50
New London	2 75	2 50		1 45	1 65	1 70
Newport	2 30	1 90		60	60	65
New York	2 35	2 00		1 00	1 25	1 25
Norwalk	2 50	2 60		1 40	1 55	1 70
Norwich	2 85	2 50		1 50	1 70	1 80
Pawtucket		2 75		1 90	2 15	2 20
Portland	3 25	2 80		2 40	2 60	
Portsmouth, N. H	3 50	3 00		1 45	1 65	1 70
Providence	2 80	2 50				
Rockport						
Saco				1 30		
Sag Harbor		3 00		2 25	2 45	2 55
Salem	2 70	3 00		1 00	1 25	1 25
Stamford				1 35	1 50	1 55
Stonington				1 95	2 15	
Taunton				1 45	1 65	
Warren						
TO RIVER PORTS						
Albany		2 40				
Catskill						
Cocksackie						
Coeyman's						
Cold Spring	2 30	2 25				
Fishkill						
Haverstraw						
Hudson	3 25	2 30				
New York						
Nyack	2 25					
Poughkeepsie	2 50					
Rhinebeck						
Rondout						
Saugerties						
Sing Sing						
Stuyvesant						
Tarrytown						
Troy	3 00	2 50				
West Point						
Yonkers						

St. Thomas	$5 00 Gold.
Martinique	5 00 "
Demerara	6 00 "
New Orleans	6 00 "
Mobile	6 00 "

MARKET REVIEW.

NEW YORK, Nov. 14, 1872.

IRON—Scotch Pig has been more active since our last, stimulated by the near approach of the close of navigation, and the general desire on the part of importers to close out lots that have been on hand for some time past, the market on the other side not affording encouragement to hold them longer. Special cable reports advise the near approach of the downfall of the ring in Glasgow, that has controlled the market there for some time past. The stock of all brands here is very little over 3000 tons closely concentrated, some of which is of very poor quality, and difficult to sell except at very low figures. We have to note sales of 300 tons Eglinton at $45,50, and sundry other small lots same brand, particulars withheld but at full figures; 200 do. Carnbroe, $49a50; 300 do. Glengarnock, the stock of which is now not over 250 tons, $51a52; and several hundred tons Coltness, here

and to arrive, $55 and upward. American Pig occupies about the same position formerly noted, but as navigation draws to a close, there is more dispcsition to accept lower prices; we note sales of 230 tons No. 1, part Allentown, at $53a55 per ton. Old and new English Rails are very quiet and prices are nominal. Scrap is moving slowly at about previous figures.

PHILADELPHIA, Nov. 11.—(From Circular of Edward Samuel).—Pig is still weak and unsettled, holders generally preferring to sell, rather than take the chance of a recovery in prices. Small sales of Susquehanna are reported at $42,50 at furnace for Grey Forge. Old Rails are in but little demand with large stocks. Wrought Scrap is dull. Closing prices American No. 1 Foundry Pig at furnace $51,50a52,50, No. 2 $49a50, No, 3 Forge $44a45. No. 4 White and Mottled $37,50a39, and Refined Bar (mill price) 6 cents.

COPPER—New Sheathing is steady at 43 cents, and Bolts and Braziers 45; Bronze and Yellow Metal sheathing 27, and Yellow Metal Bolts 32, net cash. Ingot continues in limited demand, and prices, though without quotable change, are rather in buyers' favor; about 100,000 lbs. Lake sold in lots at 31½ cents; for December and January delivery 32¼ is asked. In English, we note sales of 75 tons Best selected at 28½ cents, at which it is offered freely on the spot and to arrive; in small lots 29 cents is obtained.

LEAD—Pig is quiet but firm at 6¼ cents for ordinary Foreign, and 7a7¼ gold for Refined for corroding purposes. Manufactured is steady at our quotations.

SPELTER—Foreign remains very quiet, but stocks are not urged, and holders are firm at 6¾a6¾ cents gold, for Silesian.

TIN—The market for Pig has seldom been as dull as during the past few weeks; stocks are offered at steadily declining prices without eliciting any response from buyers, so that while we further reduce our quotations, they are still entirely nominal, say for straits and English 31 a31½ cents, and Banca 35a36 gold, jobbing lots half a cent per lb. more. Plates are also almost wholly neglected, and prices of full parcels are nominal; we have only to notice the sale of 300 bxs Charcoal Terne at a private price.

ZINC—Black oxide 4 cents currency, Peroxide gray 5½, Sheet is quoted at 9½ gold.

The following we extract from a circular of Messrs. Baring Bro's & Co., dated London Oct. 25, 1872:—

COPPER—English without change; Tough Cake and Ingot £88a90, Best Selected £92a93, and Sheathing £92a96. Foreign—Chili Bars declined to £78 for Lota, but prices since improved £1a2 per ton; Urmeneta Ingots, $91.

IRON—Quiet. Weardale Steel Rails (Bessemer) £18, Plates £23, Pigs 160s. cash, and W. B. Pigs 127s. cash; Tudhoe Bars £14 10s., Hoops £16, Plates £18, and Iron Rails £12, all f. o. b. in Wales, 6 months. Scotch Pigs—Gartsherrie and Coltness 135s., Glengarnock 130s., and Eglinton 120s. all No. 1, net, f. o. b. Glasgow.

LEAD—Steady. W. P. Pig £21 15s.a22; other good brands £20a20 10s.

TIN—English in demand; Blocks and Ingots 148s., Bars 149s., Refined 150s. Foreign—Straits declined 1s.a 2., now quoted 139s.a140.; Banca 155s.

SPELTER—Firm at £23a23 10s.

The following is the Metal Circular of Vivian, Younger & Bond, dated London, October 24, 1872:

Uncertainty regarding the future course of the Money market continues to absorb public attention, and much restricts legitimate operations in most departments of the Metal trade.

COPPER—The improvement advised in our last issue of 17th inst. has been entirely lost, the speculative buying being over, and in the absence of any purchases by consumers of sufficient importance to maintain prices. A fair quantity of Chili Bars has changed hands from £83 down to £80, at which latter quotation the market closes steadily. Fine Foreign sold at £88 down to £86 for Wallaroo and Burra Cake, and Japan £85a84. In English the demand for Manufactured is very limited, although orders can be executed considerably under quotations.

TIN—For several days the market kept firm at 143s. for Straits, but since lower prices have been taken, closing quietly at 140s. In English not much doing at 146s.a157s. for Ingots.

TIN PLATES—Dull, and orders still limited.

IRON—Orders for shipment can be executed on more favorable terms, but there is a want of expert demand.

SPELTER AND LEAD—Steady at quotations.

Messrs. Paterson, Simons & Co., Singapore, under date of Sept. 21, 1872, state that owing to favorable telegrams from Europe, Tin has been in great demand, and found ready buyers at from $37,50 to $38,12½, the latter being to-day's quotation. It is not improbable that, owing to the disturbances at present existing in the native states around Malacca, that there may be a considerable falling off in supplies.

METALS.

NEW YORK, November 14, 1872.

IRON.—Duty: Bars, 1 to 1¼ cents ℔ lb; Railroad, 70 cents ℔100 lbs.; Boiler and Plate, 1¼ cents ℔ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1¾ cents ℔ lb; Pig, $7 ℔ ton; Polished Sheet, 3 cts. ℔ lb; Galvanized 2¼; Scrap Cast, $6; Scrap Wrought, $8 per ton. All less 10 per cent. No Bar Iron to pay a less duty than 35 per cent. ad val.

	Store Prices.
Pig, Scotch—Coltness ℔ ton	55 00@56 00
Gartsherrie	53 00@54 00
Glengarnock	50 00@51 00
Eglinton	47 00@48 50
Pig, American, No. 1	50 00@55 00
Pig, American, No. 2	48 00@51 00
Pig, American, Forge	41 00@45 00
Bar Refined, English and American	— —@120 00
Bar Swedes, assorted sizes (gold	120 00@130 00
	Store Prices, Cash.
Bar, Swedes, 1¾ to 5 x ⅜ & ⅞ 2 sq. & 6 to 12 x ⅜ & ½	145 00@155 00
Bar, Refined, ⅜ to 2 in. rd. & sq. 1 to 6 in. x ⅜ to 1 in.	— —@112 50
Bar, Refined, 1¼ to 6 by ¾	117 50@— —
Bar, Refined, 2½ to 2¾ round 1 & 1¼ by ¼ & 5:16	120 00@— —
Large Rounds	120 00@132 50
Scroll	130 00@160 00
Ovals and half-round	135 00@155 00
Band	— —@130 00
Horse Shoe	125 00@135 00
Rods, ⅜ to 3-16 inch	117 50@160 00
Hoop	135 00@180 00
Nail rod	@ 9
Sheet, Russia, as to assortment (gold)	16½@ 17
Sheet, Singles, D. and T. Common	—7½@— 8½
Sheet, D. and T. Charcoal	—8½@— 9
Sheet, Galv'd, list 10 per cent, discount	—@— —
Rails, English (gold), ℔ ton	72 00@ 73 00
Rails, American, at Works in Pennsylvania, currency	80 00@ 85 00

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ℔ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ℔ lb	— @— 43
Copper Bolts	— @— 45
Copper Braziers, 16oz. and over	— @— 45
Copper Nails	— @— 45
Copper, Old Sheathing, &c. mixed lots	26 @— 28
Copper, Old, for chemical purposes, 14@16 oz.	— @— —
Copper, American Ingot	31¼@— 31½
Copper English Pig	28½@— —
Yellow Metal, New Sheathing & Bronze	— @— 27
Yellow Metal Bolts	— @— 32
Yellow Metal Nails	27 @— 30

LEAD.—Duty: Pig, $2 ℔ 100 lbs.; old Lead, 11½ cents ℔ lb; Pipe and Sheet, 2½ cents ℔ lb.

Galena, ℔ 100 lbs.	$— @— —
Spanish (gold)	6 50 @6 62½
German, do.	6 50 @6 62½
English do.	6 6¼@7 00
Bar (net)	9 25 @—
Pipe (net)	— —@11 00
Sheet	— —@11 00

Colwell, Shaw & Willard Tin-Lined Lead Pipe 16½ cts. ℔ lb.

STEEL.—Duty: Bars and ingots, valued at 7 cents ℔ lb or under, 2½ cents; over 7 cents and not above 11, 3 cents ℔ lb; over 11 cents, 3½ cents ℔ lb, and 10 ℔ cent ad val. (Store prices.

English Cast (2d and 1st quality) ℔ lb	— 18 @— 22
English Spring (2d and 1st quality)	— 9½@— 10½
English Blister (2d and 1st quality)	— 11½@— 16
English Machinery	— 11½@— 14
English German (2d an 1st quality)	— 11½@— 12
American Blister "Black Diamond"	— — @— 11½
American, Cast, Tool do.	— — @— 17
American, Spring, do.	— — @— 11
American Machinery do.	— — @— 11½
American German, do.	— 9 @— —

TIN.—Duty: Pig, Bars, and Blocks, 15 ℔ cent. ad val.: Plate and Sheets and Terne Plates, 25 ℔ cent.: Roofing 25. ad val.

	Gold ℔ lb.
Banca	35 @36
Straits	— @31
English	— @31½

PLATES.

Fair to Good Brands.	Gold.	Currency.
I. C. Charcoal, ℔ box	$12 00 @12 25	$14 00 @14 50
I.C. Coke	10 25 @11 00	13 75 @12 50
Coke Terne	9 50 @10 00	11 00 @11 50
Charcoal Terne	10 25 @11 00	12 00 @12 75

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 p. 100 lb

Plates, Foreign	(gold) p. 100 lb.	6 62½@ 6 87½
Plates, Domestic	p lb.	8¾@— 10½

ZINC—Duty: Pig or Block, $1.50 per 100 lb.; Sheet 2½c. per lb

Sheet	per lb.— 10 @ 10½

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, Nov. 14, 1872.

The following report from the San Francisco Stock Board is dated the 12th inst. Without exception the market has declined, Gould and Curry and Yellow Jacket figuring most prominently in the downward tendencies, the former item being quoted $40—and the latter $27—per share lower than last week, a comparison of the two reports as annexed exhibits a regular downward movement of the list.

		Nov. 7.	Nov. 12.
Savage	—	96	82
Crown Point	—	125	120
Yellow Jacket	—	120	93
Kentuck	—	—	210
Cholliar Potosi	—	72	68
Gould & Curry	—	220	200
Belcher "New Issue"	—	110	105
Imperial	—	11	10¾
Raymond & Ely	—	133	126
Meadow Valley	—	23	22

C. F. A. HINRICHS.
ESTABLISHED 1801.
Sole Owner and Dealer in the celebrated all-metal Saint Germain or
GERMAN STUDENT'S LAMP.
Stachlen's Patent Lamps. These lamps give the steadiest and clearest light and are the safest in use, particularly suitable for
Engineers' Miners' and Draftmen's
Night Work. Also Importer of Fine Glassware, French China, Lava, Parian, Toys, Fancy Leather Goods, Clocks, Bronzes, Cutlery, Smokers' Articles, Masks, Looking Glasses, &c., &c.
Display and Retail Sales for the Holidays during December.
29, 31, 33 Park Place,
Oct. 29:3m NEW YORK.

MISCELLANEOUS.

FURNACES, RANGES, STOVES.
SANFORD'S PATENT CHALLENGE HOT AIR FURNACES,
STATIONARY, or PORTABLE, very powerful and economical, always satisfactory;
New York Fire Place Heater,
warming several rooms with one fire;
CHALLENGE KITCHEN RANGES,
a variety of Choice PORTABLE RANGES, and first-class COOKING STOVES; also the famous
BEACON LIGHT BASE BURNERS,
SANFORD'S MAMMOTH, or GLOBE HEATERS,
and other heating stoves, made by
THE NATIONAL STOVE WORKS,
Nov. 19:6t 239 & 241 Water street, New York.

THE
American Trade Journal.
Particularly devoted to the general trade interests of the country, has an established commercial circulation exceeding
40,000 COPIES,
extending throughout the United States, and to Great Britain, Brazil, Mexico, Central America, Buenos Ayres, Chili, Australia and Japan.
It has been the agent for the successful introduction to notice and sale of American productions in the countries named; and, by a steadily increasing circulation in that direction, has proven the most valuable medium for our trade interests abroad as well as at home.
Published Weekly and Monthly under the auspices of the
BOARD OF TRADE.
F. H. ROLLINS, 8 Church street, New York.
Oct.1.1.year

DROWN & CORLISS,
ANALYTICAL CHEMISTS
AND
CONSULTING METALLURGISTS.
1123 GIRARD STREET,
PHILADELPHIA.
THOMAS M. DROWN. GEORGE F. CORLISS.

W. B. COGSWELL,
Civil & Mechanical Engineer.
SPECIALITY:
Blast Furnace Construction.
P. O. Address
Franklin Iron Works,
Oneida County,
Nov. 19:1y N. Y.

SALE OF VALUABLE
MINING PROPERTY.
BY Virtue of a decree of the Court, we will sell for cash, at the Forge, in Franklinsville, Randolph County, N. C., on the 20th of December, 1872, the following valuable property:
One undivided half of 15 acres, known as the Hopper's Ford Mill site.
One other track of 30 acres, known as the Iron Ore Hill, on which is an inexhaustible bed of superior Iron Ore.
One tract of six acres, on which are all the buildings, forge, &c.
Also 50 acres, valuable for minerals, adjoining the above.
Also, some personal property—mining implements, large whim rope, &c., &c.
A. G. HORNEY, } Com'rs.
W. F. BOWMAN, }
Nov. 12:6t

STEAM ENGINES.
Portable and Stationary. "The Best Cheapest, most Durable." Improved Circular Saw Mills, Screw and Lever Set. Send for Circular.
UTICA STEAM ENGINE CO., UTICA, N. Y.
G. G. YOUNG, General Agent,
Nov. 12:6mos 42 Cortlandt Street, New York.

"ENGINEERING."
"The leading Engineering Journal of the world," indispensable to every Civil, Mining, or Mechanical Engineer, can now be obtained post-paid at $9 30 currency, by remitting Post Office order to NEW YORK OFFICE "ENGINEERING," 52 Broadway.

NEW PUBLICATIONS.

REPORTS OF THE INSPECTORS OF COAL MINES *of the Anthracite Coal Regions of Pennsylvania, for the Year* 1871. Harrisburg, 1872.

The inspectors of coal mines under the Pennsylvania law of 1870, appear to have performed their duties with reasonable fidelity and intelligence; and their reports of the condition of the collieries, number and causes of casualties, etc., if printed with decent care, in a small pamphlet, would be of value to the profession and the public. Unfortunately, their contributions are very badly edited and printed; and moreover, Mr. P. F. M'ANDREW, the clerk of the mining district of Schuylkill, has (to adopt Mark Twain's expression) "drooled" a large amount of additional matter into the book, and completely spoilt it for any use except the amusement of the reader. Mr. M'ANDREW is the most conspicuously ignorant and illiterate man in the State of Pennsylvania. That commonwealth may contain, in some remote rural district, a citizen that knows less, and thinks he knows more; but he has never been produced in public life. In literature, the only parallel to M'ANDREW is DOGBERRY.

It is useless to attempt an analysis of this clerk's report. Criticism stands aghast before such a compound of audacity and puerility. Grammar, mathematics, chemistry, history, philosophy and theology are invoked only to be defied. Here are a few extracts, which must pass almost without remark. Like the old sinner who, once in his life, forbore to curse because he "couldn't do justice to the occasion," we forbear to criticize. Indeed, where a hundred pages are so uniform in quality, we feel that it is invidious even to select anything for special quotation. But this journal is not exclusively a comic paper, and we cannot, therefore, with due regard to the sober portion of our readers, print M'ANDREW unabridged and entire.

Here is the latter half of page 66, *verbatim:*

POWDER.

"Its constitution compared with steam, is as follows: Its history is of early date among the Chinese and Hindoos, when Europe of to-day was sunk in semi-barbarism. Appolonius, in writing of a nation of Oxydracæ, a people inhabiting the territory lying between the Ganges and the Hyphasis, whom Alexander the Great declined to war against, as they always conquered their assailants by, what appeared to the invaders, thunder and lightning.—[Here M'ANDREW, like the sailor preacher, has mislaid his predicate, but he's on the road to glory.] They also repulsed Hercules and Bacchus, who overran India and Egypt. The invention of powder, in Europe, has been attributed to a German Monk, in the 14th century, named SCHWARTZ, or "Black Monk"; and also to FRIAR RODGER BACON, who is the author and compiler of the English language, and who compiled it from seventeen different languages, and taught and spoken in the 13th century. SCHWARTZ's claims to its European invention is of no value, as he lived in the following century. These facts are not the less remarkable, when such learned Doctors of Divinity are the inventors of this wonderful agent. It is also singular that the composition and properties of the constituents of powder should remain unchanged from the earliest discoveries to the present time."

M'ANDREW's notion about the origin of the English language is only equalled by his ideas concerning its present condition. His variety of it, at least, is a huge compilation. See, for instance, the following sentence from page 74, under the title "Man's Relation to Man."

"Man being a free agent by natural law, and alone responsible for the measure of his intelligence, his desires and necessities being numerous, and the vicisitudes of his life diversified and variable, his nature is agrarian, selfish, avaricious and covetous; knavish, tyranical, cruel and violent; outrageous, fierce, furious and passionate; vindictive, villainous, wicked and depraved."

On page 70, we read:

"Here we append an illustration of the different temperatures of heat at which certain bodies become liquified, to show to what a destructive extent the person of the miner is subjected to under the explosion of fire-damp."

Then follows a table of melting and boiling points, after which the subjoined reflections:

"Thus it will be seen by the foregoing table the degrees of heat which produce the liquefaction of metals. Compare these temperatures with the heat of the human blood, and even inhumanity itself must shudder with pity at the direful torture the miner must undergo by the shock of an explosion of carburetted hydrogen gas, besides the chances of being suffocated by after-damp. Really his calling is but a forlorn hope at best, besides the destitution it entails on those whose maintenance depends on his earnings."

M'ANDREW, we take leave of you with regret. You compel admiration, in the original sense of that word, (which it had when ROGER first compiled it out of seventeen languages,) to wit, astonishment. We wondered, last year, why the State of Pennsylvania, many of whose citizens can read and write, while some can cipher, should continue to pay you a salary, and print your compilations. But now we see that the State is proud of you. You attract attention. You occasion remark. Possibly you may "invite capital"—they say great natural curiosities have that effect—and as to the expense, it is only a nominal difference in the ledger. Why not pay you as clerk, instead of having you charged to the Asylum as inmate?

The Sachs Rock Drill.

TO THE EDITOR—Sir:

Number 5 of your journal, dated July 30 (volume XIV., fourth series), contains an article "Notes from Saxony," signed Bernsdorf, June 9th, 1872, A. M., wherein, amongst other things, Sachs' rock boring machine is mentioned as the best known, but the greatest obstacle to its general use is said to be its high price. After this, your correspondent goes on to say that three boring machines of the said system, with air compressors and other appurtenances, but without steam engine, cost about 3,000 thalers.

As Mr. Sachs has intrusted the making of his boring machines to the Humboldt Engine Works Co., in Kalk, near Deutz, on the Rhine, which I represent, and since these machines have been patented in the United States, will you be so kind as to allow me a little space in your journal for a reply, by which you will see that the assertion of your correspondent as to price is not quite correct. From the respective circulars, which I have the honor to send you for inspection, you will gather that three boring machines are usually supplied where only two can work, as it is well to keep one machine in reserve against breakage and repairs. It may, however, be observed, that one duplicate machine is also sufficient for five or six working machines.

To work two boring machines, an air compressor of 160-millimeter plunger diameter is required. The cost of such an arrangement, with two stands, one for sinking shafts and another for galleries, is at present as follows:

	Thalers.
Air compressor, without steam engine and boiler	600
3 boring machines	750
1 stand for galleries	320
1 stand for sinking shafts	70
1 tank for injecting water in the hole	90
2 India rubber pipes	60
1 air reservoir with fittings	350
Iron tubing between air compressor and air reservoir, about	35
Total	thalers 2275

There is yet a difference of 725 thalers between this sum and 3,000 thalers, and for these 725 thalers about 450 meters of 1½ inch wrought iron pipes of best quality may yet be had. This calculation will show you that a very complete arrangement for three boring machines, including 450 meters of iron piping, may be bought at the price of 3,000 thalers. In order to compare our Sachs machine, as regards price, with others, it must be borne in mind that the price of the boring apparatus itself is cheaper than any other known machine of that kind. Furthermore, experience has taught that these machines, with the same working effect as other systems, require much less air, and consequently smaller air compressors, and less air piping. It clearly follows that our boring arrangements, as a whole, are the cheapest which are known.

The best evidence of this assertion is that Sachs' machines are everywhere rapidly extending in use, and that the price never forms an obstacle where a great saving of time is the chief object.

MASCHINENBAU-ACTIEN-GESELLSCHAFT Humboldt, vorm. Sievers & Co., der General-Director

M. NEUERBURG.

Our correspondent sends a long list of firms who use the Sachs borer, confirming the statement of our former correspondent that these machines are in high favor. We should remark further that the Prussian thaler is worth 72 cents coin, American currency.

Prejudice in Cornwall.

The *Mining World* has an excellent article on the absurd opposition which the best inventions meet in Cornwall. It enumerates some of those machines, the value and success of which is undoubted, and which are making their way everywhere else, and shows that the Cornishmen persist in rejecting them. "Take," it says, "as an instance, Burleigh's rock drill. This instrument is being rapidly adopted in Wales and other counties, but up to the present time only two of them have found their way to Cornwall, and one of these has been purchased by Sir Morton Peto, who, of course, has no share in local prejudices, and the other is purchased for an iron mine near Bodmin, whether by a Cornishman or not we are unable to say. Now it has been established beyond a doubt that this machine is very efficient in operation, and is as applicable to Cornish mining as to mining in Wales. At the trial of the drill, at the last meeting of the Royal Cornwall Polytechnic Society, it was awarded the highest honor the society is in the habit of bestowing. Previous to that there was a high testimony to its working from Captain W. Wasley, from Wales, who was sure, from his practical experience of mining in the Gwennap and Redruth mines, that the drill 'would be a wonderful thing if it was got into our Cornish mines.' The most favorable testimony and the most conclusive proof of the economy of the instrument have not sufficed to hasten its adoption in Cornwall. We believe, however, that it must make its way by-and-bye. Adventurers cannot much longer be content with the present slow system of operation, when there is at hand a machine which, with one man, is equal to boring as much as six men by hand, besides affording other advantages in working.

Let us take, again, the Blake stone-breaker. The Terras mine was the first to introduce the stone-breaker into the county, and the innovation would not have come so soon, but for the enterprise of an American gentleman. A second, we believe, has been recently ordered; but these are the only two in the county. Now, the only objection we have ever heard raised to this economical machine is that it is difficult to keep the various workings or samples of stuff apart; but we are assured that this objection can be readily overcome. There are, however, many mines in the county where the stuff is of a similar character throughout, and where the stone-breaker might be profitably employed. At South Condurrow, just one of those mines where the stone-breaker might be most advantageously used, we heard the agent raise the absurd objection that the stuff was too hard for a stone-breaker, and that it would knock the machine all to pieces. The objection was only born of prejudice—not ignorance—because he must have known, as well as the other gentlemen present, that such a machine as Blake's Stone-breaker will crush the hardest stone, and even steel itself. Prejudice here keeps a host of 'bal' girls at work which a stone-breaker would do at infinitely less cost to the adventurers, and the same remark applies to other mines."

THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D.,
JOHN A. CHURCH, E. M.
Editors.

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THE ENGINEERING AND MINING JOURNAL *is projected in the intent of furthering the best interests of the Engineering and Mining public, by giving wide circulation to original special contributions from the pens of the ablest men in the professions. The careful illustration of new machinery and engineering structures, together with a summary of mining news and market reports, will form a prominent feature of the publication.* It is the Organ of the American Institute of Mining Engineers, and is regularly received and read *by all the members and associates* of that large and powerful society, *the only one of the kind in this country.* It is therefore the best medium for advertising all kinds of machinery, tools and materials used by engineers or their employees.

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THE census returns of iron and coal production, which we gave last week, are as good as could be obtained under our defective Census Law, with its antiquated blanks and its exclusion of experts from the work of special departments. There are some evident errors, however; and, chief among them, an error of about a million tons in the iron ore production of Pennsylvania, caused by the lack of separate reports from parties who mined and smelted, in that State, their own ores. If the census had included the important and extensive transportation business, there would have been an additional means of verifying such statistics. The Superintendent is not to blame, but the politicians are.

THE shipments over the Utah Central Railroad for the two months of August and September are:

August, 1872—Ore, 928 tons, bullion, 682 tons.
September, 1872—Ore, 1530 tons, bullion, 681 tons.

This is all told 2458 tons of ore and 1363 tons of lead. The October shipments have not yet reached us. The condition of Utah is good. The German Refining Works (Sieger's-Flach's process) are almost completed, also the smelting works of the Davenport mine near the Flagstaff Company's works. Other establishments are projected. Utah has indeed never lacked a determination to have smelting works, and the number that have been built there would astonish one not acquainted with the conditions under which the furnaces rose. Had there been as much intelligence as pluck the Territory would now be even more wonderful as a mining field that it is.

Steam Pumps in Mines.

The extent to which direct-acting steam pumps may be economically employed in mines is a matter which requires and will repay attention. That there are inconveniences connected, in many cases, with the use of such pumps, no one will deny; that the use of high-pressure steam without expansion or condensation is not economical of fuel, will also be admitted. There is also a loss in power (though smaller than one might imagine) by the condensation of steam in the pipes through which it is transmitted from the boiler outside to the engine in the mine. But all these points may be counter-balanced by the greater cheapness of first cost, and the greater simplicity of operation, freedom from gearing, etc., involved in the use of steam-pumps. We recently saw a CAMERON pump several hundred feet under ground, in the Idaho mine at Grass Valley, California, doing excellent service. And this week we give in our Mining Summary an account of the manner in which the Briggs Company, at Central City, Colorado, is removing the water from its mine, by means of four KNOWLES' pumps. It will be seen that the first cost of the plant for a depth of 600 feet was only $5,300, and that $10,000 has covered the entire expense of the machinery and the pumping out of the water. We trust this very successful experiment will lead to further attempts. One difficulty in using these pumps in mines is the same as the first steam-pumps encountered everywhere—people are not used to them. This will be remedied in time.

The Beginning of a New Architecture.

THE Boston fire, following so closely upon that in Chicago, proves that great conflagrations are not necessarily *exceptional* "dispensations of Providence." Indeed it has roused a strong suspicion in most minds that this is a kind of dispensation which man has it in his power to avert by proper means. When Chicago burned there were sober, intelligent and perfectly sensible people who, whilst the flames were raging, really thought that the last day of the world had perhaps come and that the universe was passing away in the manner so often predicted. But at Boston they saw more clearly the true state of affairs and laid the cause where it really belonged, to the Mansard roof and the American system of making combustible buildings. Little good has grown out of the Chicago fire, but the one whose embers are still smoking promises to mark the beginning of a new era in American architecture. New York thrilled with alarm, and many a citizen on that Sunday afternoon looked down the long avenues of stately buildings and wondered how soon they, too, would be the pathway of unconquerable flames.

The *wooden* French roof is doomed. Three influential classes have spoken against it. They are: the architects who will advise against them, Common Councils which, like that in New York, propose to memorialize the legislatures to make them illegal, and, most powerful of all, the insurance companies which, through the Board of Underwriters have voted to increase the insurance on all buildings which are topped with those fire traps, to such a rate, that the owners will find it cheaper to pull them down than to insure them.

But this is only half the battle. The French roof, made of wood covered with a shell of slate or tin was indeed the doorway through which the fire eagerly entered many a fine building, but there were other faults of construction which helped the flames to make their work sure. Most of our floors are wood, and behind the plaster on our walls is an open space through which currents of air sufficient to feed the fire can pass. In fact a fire built in the cellar of almost any one of our houses will, and often does, make its way to the roof. Conversely, a fire built on the roof will make its way to the cellar and has often done so. There is a way of remedying this defect of our houses, and it is not necessary to put in the massive iron girders and the expensive brick vaulting which make up the only method of fire-proof building practised in this country. Abroad floors are made with light iron beams filled in with plaster of Paris. The cost is only about two or two and a half times that of the wood floor and the effect is such an approach to absolute incumbustibility that Paris—built in that way—did not burn even when an army of fiends had deluged many of its buildings with petroleum. In that city, and in others built like it, men have left a room in the morning, and returned to find everything in it reduced to ashes. Fire had in some way been communicated to the carpet or the furniture and all that the room contained was destroyed; but the damage had gone no further. We have known of a fire occurring on a floor immediately under one which was used as an architect's office, and contained the stores of paper, wood tables and similar furniture usual in such offices. But the architect's assistants kept on with their work and hardly summoned interest enough to look out at the manœuvres of those four wheeled squirts, which are called "pompes" by the Paris Fire Brigade.

It is construction of this kind that is now called for on every hand. And there is a good prospect that we will get it. Our people have long nursed a fallacious view of insurance. We heard one gentleman say it would not pay to put $1500 more into the flooring of his house, because he paid only $15 or $20 insurance, while the interest on the cost of fire proof flooring would be five or six times as much. But does any insurance ever fully cover the loss by a fire? Can the thousand valued objects which one gathers in a life time be paid for by a few hundred dollars? They cannot, and if any Insurance Company will contrive a way, not to pay the loss, but to prevent it entirely, we will warrant it a good business at treble rates.

We never looked upon the Chicago fire as anything but a disaster; but the Boston fire bids fair to be a blessing in disguise. It has awakened the Insurance companies to the necessity of reforming their business, and the purification they have entered upon cannot fail to make them stronger and safer. It will certainly foster the introduction of better modes of building, and may lead to the entire prohibition of what is faulty in the old methods. It may lead, too, to the destruction of those perilous roofs which seem to have been most affected by builders of hotels and apartment houses and other places where human beings are most thickly congregated, and therefore where they are most likely to do damage. The licences to build such roofs of this kind as are not yet completed, have been revoked by the department of buildings in New York, and that city may look upon the calamity of its neighbor as the cause of its own release from a threatening danger.

The Character of Scientific Testimony.

WE printed some time ago a short article upon the trial of peat fuel in a small iron furnace at Ishpeming, in which we rebuked the undue pretensions made in behalf of peat as a fuel. Those pretensions were no less than a complete overthrow of the British iron trade, so far as it is in rivalry with our own! We brought forward no arguments in opposition to this absurdity, but merely referred the claimants to the past history of peat and the long continued and generally unsuccessful efforts to introduce it into practical metallurgy. We were sure that if those who made such a hurrah over a still untried experiment, would look into all that has been done they would take up the subject with cooler minds and treat it with more sense. That article, unimportant

as it was in our view, brought about our ears a storm of criticism, plentifully mingled with epithets. It appeared that a number of gentlemen, connected with various trade journals, had been writing on the subject of peat and always in high confidence of its success. We were in truth aware of that fact, but as we had not found in their productions any proofs of an acquaintance with the faithful labors of the numerous experimenters from KARSTEN down, we, as before remarked, referred them to the careful and exact records of those investigations, which are to be found in the professional journals and books, both of Europe and America. Finding ourselves the object of so much criticism, we subsequently gave a partial explanation of the leading objections to the use of peat, by no means exhausting the subject, as will be understood when we say that the usual and crowning impurity of peat—phosphorus—was not even mentioned. But we pointed to the enormous percentage of water, part, and indeed more than half, of which cannot be eliminated by mere drying, and to the fact that only about 15 per cent. of the bog is peat, which, in the process of charring, is further reduced more than one half, theoretically, and nearly three quarters in practice.

It is with unwillingness that we take up this subject again. It is not a thing to be argued but requires the demonstration of facts, and we propose now, not to go into the question of peat as a fuel, but to criticise with all openness and fairness the statements of some of our contemporaries and of correspondents. We do this because, if there is to be a discussion of the main question, we want to have it a useful one. Undoubtedly great advances have been made of late years in the modes of procuring peat. But beyond that we cannot go very far. For unlike the older records which were full, exact and truly scientific, the later discoveries are too often known only by broad and indefinite assertions; assertions which do not bear any too well the test of examination.

For instance, the *Coal and Iron Record* says:

> There appears to be but one opinion as to the value of peat fuel in metallurgy, and that is a most favorable one. Messrs. W. D. ANDREWS & BRO., one of the largest iron houses in this city, have used peat fuel and say that for making steel the result was very gratifying, and accord to it qualities for that purpose "even superior to charcoal."

We have enquired of Messrs. ANDREWS & Co. and learn that some years ago they had about eight barrels of peat sent them for trial. They put it under their boiler and after some hours took out eight barrels of ashes. They have never seen fit to repeat the trial and speak in the most unfavorable way of their experience with peat. The same paper quotes Hon. S. P. ELY, who is interested in the Ishpeming furnace. Of the trial there, which, according to another contemporary, is to be so disastrous to the future peace of the British Lion, we have seen only the following testimony, all else being the barest assertion made by persons who seem to have obtained their information mainly from Madam Rumor.

Charge before using peat:

	Ore lbs.	Coal lbs.	Flux lbs.	Product lbs.
Sept. 17.....	14,025	9,945	612	7,454

Charge after using peat:

	Ore lbs.	Coal lbs.	Peat lbs.	Flux lbs.	Product lbs.
Sept. 18...	14,300	1,278	8,750	624	7,000
" 19...	12 750	6,120	8,785	612	10,478
" 20...	15,700	6,720	9,800	672	11,183
" 21...	11,500	7,680	850	552	12,362

We recommend the above to those of our readers who are iron masters. A run of five days is not altogether a trustworthy basis for calculation, but we have looked in vain for subsequent details and must use these. A very easy calculation will show that the yield from the ore day by day was as follows:

With charcoal alone..... 53 per cent.
With charcoal and raw peat, 49—82—71 and 107·5 per ct.

The analysis of the peat is not given, but a considerable acquaintance with peat analyses convinces us that the Hon. S. P. ELY has struck something exceedingly rich in a peat which contains so much iron as to make a 53 per cent. ore yield 107½ per cent. of iron! It has been suggested that the manager of the Ishpeming furnace has mistaken the name of the substance he obtains from his bog, and is burning bog iron ore instead of turf!

The *Mining Journal*, in which the above data in regard to the Ishpeming furnace first appeared, perpetrates some reasoning (?) upon them which we will quote for the reason that it illustrates perfectly the style in which the advocates of peat have handled this question. In consequence of heavy rains, water backed up under the furnace and chilled it so that its working was interrupted—the last day of regular (?) working being September 1st. The *Mining Journal* is in a panic lest the backing up of the water should be charged to the use of peat, and goes on in the following astonishing fashion:

> "On the last day the coal was increased and the ore and peat reduced, when still more iron was obtained. This, to a prejudiced or unanalytic mind would seem to argue against peat, but it must be remembered that on the 20th—the third day—heavy rains had been prevailing, and that the agency of a chill was working by the backing of water under the hearth, which had not been discovered, though the difference in the working of the furnace had been observed, and on the night of the 21st this difficulty culminated in a hearth chill, which compelled the casts to be made over the dam. This, we contend, does not argue against peat. The same trouble would have resulted, under the circumstances, had any other kind of fuel been in use."

We lay this before our readers as a characteristic specimen of the treatment this subject has received from all the advocates of peat, with one exception, whose productions have come to our notice. This folly is all the more painful because there really is a modern history of peat, and especially an American history which is decidedly interesting, and well deserves an accurate historian. Constant though irregular attempts to utilize it have been made here, some tens of thousands of tons at the lowest calculation have been made *and used*, though not often for iron smelting. If we could obtain the exact cost, composition and behavior in the furnace we should publish them with pleasure. Our own impression is that the majority of the experiments have been unfavorable, but some are reported to have succeeded. As yet, however, with all the talk made over our article our contemporaries have brought up only one respectable authority—the Grand Trunk Railway of Canada.

We will do better than those who are so much aggrieved at our criticisms. An English engineer, Mr. JOHN HODGES, devised some years ago one of the best modes of procuring peat which we have ever noticed. It is in use in Canada, and we shall print, at an early opportunity, a full description of it.

We continue this subject with reluctance. There is no dispute among intelligent men as to the value of peat. Its place among fuels is as well known as that of anthracite, and to dispute that fact only indicates complete ignorance of the subject. The question which still remains unsettled, is simply the best means of procuring the fuel, and that question has peculiar difficulties in this country where other fuels are cheaper than abroad, while wages are much higher. We advise our critics to give up making fraudulent comparisons between peat and bituminous coals, and turn their attention to that part of the subject where something really remains to be done—to the collection of authentic statistics of peat in America, and to a discussion of the modes of extracting it.

NEXT week is to be a busy season at the American Institute. Some of the steamship companies have requested the managers of that Institution to make trial of Marine Compound Engines with the purpose of ascertaining the exact superiority of that form of motor. This is one of the most important questions of the day. These engines are known to effect a great economy of fuel, and the coming experiments are of more than usual interest in view of the expected revival of ship building in this country. That a revival of this great industry will sooner or later take place is certain, and it bids fair to make its start very soon; but, instead of following in the track which England has followed so successfully, and building iron ships, our shipbuilders seem disposed to cling to wooden constructions. They say that the number of ships lost has increased since the introduction or iron hulls; that the rating of A 1 ships in England has been reduced from twenty years to twelve; and that other circumstances favor a return to the old style of construction, in this country at least.

Volcanic Energy.

BY ROBERT MALLET, F. R. S.

IN a paper recently read before the Royal Society, Mr. MALLET reviews the principal theories which have been proposed to account for volcanic activity. The chemical theory may be dismissed, as all known facts tend to show that the chemical energies of the materials of our globe were almost wholly exhausted prior to the consolidation of its surface.

The mechanical theory, which finds in a nucleus still in a state of liquid fusion a store of heat and of lava, &c., is only tenable on the admission of a very thin solid crust; and even through a crust of but 30 miles thick it is difficult to see how surface water is to gain access to the fused nucleus, yet without water there can be no volcano. More recent investigation on the part of mathematicians has been supposed to prove that the earth's crust is not thin. Attaching little value to the calculations as to this, based on precession, Mr. MALLET yet concludes, on other grounds, that the solid crust is probably of great thickness, and that, though there is evidence of a nucleus much hotter than the crust, there is no certainty that any part of it remains liquid; but if so, it is in any case too deep to render it conceivable that surface water should make its way down to it. The results of geological speculation and of physico-mathematical reasoning thus oppose each other, so that some source of volcanic heat closer to the surface remains to be sought. The hypothesis to supply this, proposed by Hopkins and adopted by some, viz., of isolated subterranean lakes of liquid matter in fusion at no great depth from the surface remaining fused for ages, surrounded by colder and solid rock, and with (by hypothesis) access of surface water, is feeble and unsustainable.

A source, then, for volcanic heat remains still to be found; and if found under conditions admitting it to water, especially of the sea, all known phenomena of volcanic action on our earth's surface is explicable.

Various relations and points of connection between volcanic phenomena, seismic phenomena, and the lines of mountain elevation, indicate that these are all due to the play of one set of cosmical forces, differing in degree of energy, and constantly decaying with time.

Mr. MALLET proceeds to trace the ways in which the contraction of our globe has been met, from the period of its original fluidity to the present state: first, by deformation of the spheroid, forming generally the ocean-basins and the land, afterwards by the foldings over and elevations of the thickened crust into mountain ranges, &c.; and lastly, by the mechanism which, as he suggests, gives rise to volcanic action. The theory of mountain elevation proposed by C. PREVOST was the only true one, viz., tangential pressures propagated through a solid crust of sufficient thickness to transmit them, being produced by the relative rate of contraction of the nucleus and of the crust; the former being at the higher temperature, and having a higher coefficient of contraction for equal loss of heat tends to shrink away from beneath the crust, leaving the latter partially unsupported. This, which during a more rapid rate of cooling from higher temperature of the whole globe and from a thinner crust gave rise in former epochs to mountain elevation, in the present state of things gives rise to volcanic heat. By the application of a theorem of Lagrange, he proves the earth's solid crust, however great may be its thickness, and even if of material far more cohesive and rigid than those

of which we must suppose it to consist, must, if even to a very small extent left unsupported by the shrinking away of the nucleus, crush up in places by its own gravity and by the attraction of the nucleus.

This is actually going on, and in this partial crushing at places or depths dependent on the material, and on conditions pointed out, the author discovers the true cause of volcanic heat. As the solid crust sinks together to follow down after the shrinking nucleus, the "work" expended in mutual crushing and dislocation of its parts is transformed into heat, by which, at the places where the crushing sufficiently takes place, the material of the rock so crushed and of that adjacent to it are heated, even to fusion. The access of water to such points determines volcanic eruption. Volcanic heat, therefore, is one result of the secular cooling of a terraqueous globe subject to gravitation, and needs no strange or gratuitous hypothesis as to its origin.

In order to test the validity of this view by contact with known facts, two important series of experiments were completed by him; the one on the actual amount of heat capable of being developed by the crushing of sixteen different species of rocks, chosen so as to be representative of the whole series of known rock formations from Oolites down to the hardest crystalline rocks; the other, on the coefficients of total contraction, between fusion and solidification at existing mean temperature of the atmosphere, of basic and acid slags analogous to melted rocks. The latter experiments were conducted on a very large scale, and evidence great errors of preceding experimenters, Bischoff and others, as to those coefficients.

By the aid of these experimental data, Mr. MALLET is enabled to test the theory produced when compared with such facts as we possess as to the rate of present cooling of our globe, and the total annual amount of volcanic action taking place upon its surface and within its crust. He shows, by estimates which allow an ample margin to the best data we possess as to the total annual vulcanicity of all sorts of our globe at present, that less than one-fourth of the total heat at present annually lost by our globe is upon his theory sufficient to account for it; so that the secular cooling, small as it is, now going on is a sufficient primum mobile, leaving the greater portion still to be dissipated by radiation. The author then brings his views in contact with various known facts of vulcanology and seismology, showing their accordance.

He also shows, that to the heat developed by partial tangential thrusts within the solid crust are due those perturbations of hypogeal increment of temperature which Hopkins has shown cannot be referred to a cooling nucleus and to differences of conductivity alone; that this view of the origin of volcanic heat is independent of any particular thickness being assigned to the earth's solid crust, or to whether there be at present a liquid fused nucleus, all that is necessary being a nucleus hotter than the crust, so that the rate of contraction is greater for the former than the latter; and then points out that, as the same play of tangential pressures has elevated the mountain chains in past epochs, the nature of the forces employed sets a limit to the height of mountain possible of the materials of our globe; that volcanic action due to the same class of forces was more energetic in past time, and is not a uniform but a decaying energy now.

Lastly, Mr. MALLET brings his views into relation with vulcanicity produced in like manner in other planets, or in our own satellite, and shows that it supplies an adequate solution of the singular and so far unexplained fact that the elevations upon our moon's surface, and the evidences of former volcanic activity, are upon a scale so vast when compared with those upon our globe.

If then this theory will account for all the known facts, leaving none inexplicable, and presenting no irreconcilable conditions or necessary deductions, it should be accepted as true.

Volumetric Estimation of Lead.

THIS process is based on the precipitation of lead by potassic dichromate, and the decomposition of the excess of the reagent used by potassic iodide in a liquid acidulated with sulphuric acid. 0.5 to 1 grm of the pulverized mineral to be tested is dissolved in dilute nitric acid. The solution is saturated with potassa, and the precipitate redissolved in acetic acid. The iron is removed by boiling. To the solution separated from the iron 25 c.c. of potassic dichromate is added, and water to bring the volume up to 250 c.c. After standing for some time, the solution is filtered through a dry filter paper. To 100 c.c. of the clear liquid an excess of dilute sulphuric acid and potassic iodide are added in such a way as to redissolve the iodine set free, and then a few centimetres of starch. By means of a graduated burette sodic hyposulphite is added to decolorization of the starch iodide formed. The difference of titration obtained by treating the bichromate alone, and after precipitation, with a known weight of lead gives a basis for calculating the amount of metal contained in the substance tested.

E. G. Suppose $18{\cdot}2$c.c. $Na_2S_2O_3 = 10$c.c. $K^2Cr^2O^7 = 0{\cdot}2275$ gr. Pb., and after precipitating the lead 9c.c. of $Na_2S_2O_3$ were used to destroy the blue color of the starch iodide. $18{\cdot}29 = 9{\cdot}2$ $\frac{9{\cdot}2 \times 0{\cdot}2275}{18{\cdot}2} = 0{\cdot}115$ and for the 25 c.c of the liquid $\frac{250 \times 0{\cdot}115}{100} = 0{\cdot}2875$ or the mineral contains 28·75 per cent. Pb.

Of course silver, bismuth, copper and baryta should be separated from the lead before applying this process.—*M. Buisson in Revue Hebdomadaire de Chimie.*

MINING SUMMARY.

Colorado.

From the Colorado *Register* of Oct. 30

THE BRIGGS MINE AND KNOWLES STEAM PUMP.

By invitation of the Briggs Brothers, we yesterday visited and examined their mine, on the Briggs and Gregory lodes. This mine is a curiosity in its way, and a very interesting one for mining engineers and geologists to study. At the surface both these veins were worked on both the Briggs and Smith & Parmelee territory, as *one crevice*, and in some places they were not more than three to six inches apart, yet were always distinctly separate veins, with true country rock between, and carrying different characters and grades of ore—the Gregory vein always being the richest, and the Briggs always the largest. From the surface they steadily diverge from each other, the Briggs dipping slightly to the S. E., and the Gregory dipping N. W. at about the same angle, until, at a depth of 140 feet from the surface they are 26 feet apart. At that point the Gregory makes an angle, and dips S. E. about parallel to the Briggs nearly down to the 200 foot level, where it makes another turn, and dips north again, at about the same angle as above, and holds that dip as deep as it has been followed, and at a depth of 500 feet the two veins are about 80 feet apart. In the Smith & Parmelee mine, joining the Briggs on the east, we once measured the distance between the two veins in a cross-cut, at a depth of about 450 feet, and found them just 72 feet apart, while at the surface, in one place still to be seen, they were only *four inches* apart, the separating material being the regular country rock, a gneissoid granite.

This mine is now being worked on three different levels—the 150ft., 450ft., and 500ft. In the 150ft. level on the Gregory vein they are working at present one drill. They have a large, strong crevice of ore, the stamp rock in which yields 7½ to 11 oz. gold per cord, (about five tons,) and the smelting ore yields 5ozs. per ton. They have a 25 foot stope above this level, and the vein is not worked out at all below it. The mine on the Briggs vein has been wrought to a depth of over 500 feet, leaving still standing a stope 350 feet high the whole length of their ground on the Gregory. Judging by the yield of the mine in past times, this stope alone contains a very handsome fortune for the lucky owners.

In the east 450 foot level on the Briggs vein, they are working three drills. The pay vein there is four to six feet wide of fine looking ore. In the 500 foot level the pay vein is seventeen feet wide, and all good ore. The stamp rock yields 10 to 12ozs. per cord, and the smelting ore, of which there is a large per cent., sells at the mine for $100 per ton.

Mr. James Hutchinson has charge of the underground work, which, to those who know him, is enough to say of the condition of the mine. Considering the fact that it has been idle and full of water for three years, it is in excellent condition. The slight damages caused by the water have nearly all been repaired, and the balance are being rapidly put in shape, and it will very soon be as safe for the workmen as any mine in the Territory.

Now a few words relative to the drainage of the mine, which is accomplished by four

KNOWLES STEAM PUMPS,

Three 16-inch and one 10-inch steam cylinders. The first one is permanently set in the shaft at a depth of 149 feet below the surface—has a 16-inch steam, and 10-inch water cylinder with a 16-inch stroke—runs thirty strokes per minute, discharging 5½ gallons per stroke, or 165 gallons per minute, 9,900 gallons per hour, and 237,600 gallons, 7,425 barrels in 24 hours. When this pump was first put into the mine, and when hanging by a chain, loose in the shaft, at a depth of 100 ft., it was sometimes run as high as 130 strokes per minute, discharging 715 gallons of water. This pump has by far the largest part of the work to do, as at this point the water from the Black Hawk and other surrounding mines is taken up in launders and conveyed to a tank directly under the pump, whence it is taken and forced up to the surface. On the surface of the water in this tank is placed a large float, to which is attached a cord, which is passed up to and around a pulley on the throttle-valve of the pump, and has a weight attached to the other end, so that if the water rises in the tank its own action turns on more steam, causing the pump to work faster; and if it falls, it shuts off steam, rendering the whole thing automatic in its operation.

The second pump is set at a depth of 300 feet from the surface, taking the water from the third pump, and forcing up to the tank under the first. It is the same size and capacity of the first, but having less water to handle, only makes twelve strokes per minute. It has the same tank and float arrangements as the first one.

The Third pump is set at a depth of 460 feet below the surface—is the same size and capacity as the two above, but having still less water to throw than the second, only makes eleven strokes per minute. A short distance below this is placed the fourth, a smaller pump—10-inch steam and 6-inch water cylinder, with a 12-inch stroke—of the same pattern, which takes the water from the bottom of the mine, and forces it up to the third one. It discharges one and a half gallons at a stroke, and can be run up to 150 strokes per minute.

The steam is conveyed from the boilers down the shaft in a three and a half inch iron pipe, incased in a wooden pipe two and a half inches thick, which protects it so effectually that there is no perceptible loss by condensation. Two-inch supply pipes are connected with this main at each pump. The water column is of wood, 8 inches internal, and 14 inches external diameter, 3 inches thick, and wrapped with strap-iron. The sections are 6 to 8 feet long, connected with wooden thimbles inside, which allow of its being crooked about to accomodate irregularities in the dip of shafts. It is guaranteed by the manufacturers, to stand the pressure of a column of water 400 feet high, and costs but $1.10 per foot at the factory, in Bay City, Michigan.

Steam pumps have repeatedly been tried for draining mines in Colorado, but the Briggs Bro's are the first men who have made them work satisfactorily. Under their management they have proved a complete success in every way, which circumstance is attributable to the fact that they are all thorough, practical men, good mechanics, and have a habit of attending to their own business personally. The first cost of these four pumps with steam and exhaust pipes, casings and water column for 600 feet depth, laid down at the mine, was $5,300 and the *whole* cost including the setting of them in the mine and pumping out the water, has not exceeded $10,000. They estimate that an old style Cornish pump, capable of doing the same work, would have cost them $50,000. They are now making steam to run the pumps and hoist their ore with three cords of pine wood every twenty-four hours, and they estimate that it would take fully six cords to do the same work with a Cornish pump, a difference that of itself would in some cases, turn the scales from an absolute loss in working a mine, to a small profit. The repair and wear and tear expense is also much less than with a Cornish pump.

Nevada.

From the Reese River *Reveille* of Oct. 19.

BELMONT DISTRICT.

Some little stir among mine owners has been noticed here these last few days. The big strike in the Monitor

mine a few days since, in the lower level, north of the south incline, has caused some little excitement among those interested in the development of our mines. Capt. Joseph M. Brown of New York, principal owner of the Combination property here, arrived last night, and visited the mine to-day. He exrpesses so much satisfaction in the grand improvement of the prinipal mines since his visit a few months ago, that he has determined to start up in earnest the property of the Combination Co.

COMBINATION.—Has just had reduced at Austin two lots of fine ore from their Transsylvania mine, first lot of sixty tons yielded $375 per ton, second lot of 18 tons yielded $450 per ton. Working twenty-five men.

BELMONT CO.—Continuing levels north and south, taking out some good ore from levels above water. Working on the two mines twenty men.

MONITOR CO.—After running lower level north 100 feet from south incline cut across the vein towards foot wall, drifted fifteen feet and cut through a three foot vein of very rich horn silver ore. The impression of the foreman, Mr. Barney Price, is that this is the top of another large chimney which occur so systematically in this celebrated mine. Working sixty men.

EL DORADO SOUTH CON'D CO.—Have their El Dorado mine in such shape now, that forty men can be set at work stoping out ore, at any time it may be necessary to take it out for the Company's new mill. The large chimneys both north and south, on the 340 foot level look better than ever. Same level is being continued southerly through the ore body, the extent of which can only be ascertained by drifting through it. The new 400 foot level is being pushed through by contractors splendidly. In the Arizona mine, of this Company, a two foot stratum of chloride ore was cut into in the second level yesterday, the indications are that it will prove an extensive body of good ore. This company is working on mines and mill sixty men. The two mills here are being pushed to completion as fast as possible.

Utah.

TINTIC DISTRICT.

From a correspondence of the Salt Lake *Tribune*, dated CAMP FLOYD, October 17, 1872:

THE SWANSEA MINE.

This mine is situated at the base of the mountain bordering on the east side of Tintic Valley, and about one-half mile northeasterly from Silver City. The owners are O. T. Meader, Warren Hussey and Joseph H. Nevitt. Your correspondent was shown through the mine by Mr. Meader who spared no trouble or pains to make me familiar with the general lay of the land. I find that the main tunnel or level is in a distance of 324 feet; that a shaft has been sunk to the depth of about 134 feet; and another level run to connect with the level that is being run from a shaft still lower down the hill. When this connection is made, which will be in a few days, the mine will be well opened, and the company ready to put a large force of men at work. The ledge varies in size from one to five feet, and appears to be a fissure vein running north and south, and dipping fifteen degrees westward. The character of the ore is galena, chloride and carbonate, and averages, first class, 115 ounces in silver to the ton, and 50 per cent. lead. I learn from Mr. Meader that the company are now working thirty men, and the daily yield of first class ore (from one shaft) is ten tons. In conclusion on this subject, I have no hesitancy in giving it as my opinion that the Swansea mine will eventually prove to be one of the leading mines of the Territory. I pass now to the

SUNBEAM MINE.

Having been informed by numerous gentlemen in Silver City that the Sunbeam ledge, situated one mile easterly from the above named city was a mammoth sized arrangement, and that I should by all means see it, I made the trip as expeditiously as possible—without conveyance. On reaching this celebrated ledge I found but one company at work, though there appeared to be plenty of room for seventy-five more. The location that is being worked on this ledge at the present time belongs to S. B. Moore, who was absent, and had left Mr. Verdant in charge. I tried my pretty best to get this "chap" to lower me into the shaft, told him who I was &c., but to no effect. After a parley of one-half hour with my friend Verdant, I took up my line of march along the croppings of the Sunbeam ledge with my mind centered on the generosity of mankind. A march of one-half mile brought me to the

BLACK DRAGON LEDGE.

This is a ledge situated in close proximity to Black Dragon Hollow, about one mile north of Silver City. I examined but one part of this mine, and found its component parts to be spar and iron, though I understand that it stands high up in the estimation of the public thereabouts. There was *no* men at work on this ledge, consequently I leave it with the public to draw their own conclusions regarding its merit. The next forward movement brought me to the

MAMMOTH COPPEROPOLIS.

This mine is situated about one mile southerly from Eureka Hill and is owned by an English company. On account of the absence of the Superintendent of the mine I was not permitted to see it, though I gleaned the following from one of the foremen working in the mine: That it was incorporated, with some English lord as President of the company, and had been placed upon the London market at $750,000. I also learned that the main shaft of the mine was down 70 feet and that levels are run each way from it, along the ledge, a distance of 120 feet. The grade of the ore in this mine is very high, and I understand from reliable men residing in the district, that the mine is looked upon as being one of the best within the limits of Tintic district.

EUREKA MINE AND COMPANY.

This company own and work the principal part of the mines located on Eureka Hill, situated one-fourth of a mile southerly from the town of Eureka. I learned through the foreman, Mr. W. M. Nesbit, that the company had incorporated at Salt Lake City with Joab Lawrence as President, and that the incorporation own four parallel ledges on the hill—namely, the Eureka, Deseret, Young Lion and Montana, embracing 2,200 feet each in length. From observations on the hill I find that there has been a large amount of work done though the most of it has been done near the surface. I presume this labor was performed with a view of stripping the ledge so that litigation can be carried on to better advantage, for, be it known to every body, that Eureka Hill is a fine locality for litigants. The Eureka Company on one side, and the Grand Duke (Mary Henrietta) and King David on the other, have been carrying on a law suit for some time past. The case is now before the Supreme Court for final adjudication, the Eureka Company having beat the contestants before the County and District Courts. The ledges on the hill are being surveyed at the present time, in order to get direction, bearing, etc., preparatory to making the last fight, which we hope will be a final settlement. The estimate put upon the ore lying upon the several dumps belonging to the Eureka Company is 10,000 tons, though I think that estimate rather high. I did not have an opportunity to examine the shafts sunk along the line of the Eureka ledge; however, I learned from parties who are well posted, that the deepest was only down about 160 feet. In the ore lying upon the dumps can be seen nearly all the minerals of value combined, some of which, I was informed, would assay as high as $15,000 to the ton. The company are now working twenty-two men in their mines, and I learned from the foreman that the number would be increased as soon as their mill could be started up, which he thought would be ready for operation in the course of one month.

OF TOWNS AND CITIES,

The principal towns in East Tintic are Homansville, Eureka, Silver City and Diamond City. The first one of these towns reached—after leaving Camp Floyd—is Homansville, distant twenty-three miles in a southerly direction. Two miles beyond is the town of Eureka, and five miles from Eureka is Silver City. For the benefit of the readers of the *Tribune*, I will here state, that the three first named towns compare favorably with the three towns in Nevada County, Cal., known as Little York, Red Dog, and You Bet. Diamond City is three miles beyond Silver City, and is, I understand, the terminus of the stage route. The population of Eureka, Silver and Diamond Cities is about 40 or 50 each, though some of the citizens informed me that these towns are generally "alive with people on Sundays," but as I did not see any great number of people scattered about in the mountains, I am at a loss to know from whence they come. There appears to be more life at Homansville than at any other point in the Tintic range at the present time. This is the point at which the Eureka Company have built their mill, which is now near completion. This mill I learn has capacity for running twenty-four stamps, though I believe they only intend to run 12 for a time. The Wyoming Company are also putting up a mill at this point, and from general appearances I judge there may be considerable business carried on at this town during the coming winter.

Idaho.

LOCAL MINING RECORD.

From the Owyhee *Avalance* of October 30:

RED JACKET.—Work on the adit tunnel of the Red Jacket is steadily progressing, showing a vein 12 inches wide of very fine ore. It is the intention to drive this tunnel till it connects with the north shaft, when a large body of stoping ground will be opened that can be worked at trifling expense without the aid of hoisting works. Judging from the appearance of the vein in the tunnel for a distance of 350 feet, this ground will yield from 6,000 to 8,000 tons of ore. The South shaft, 70 feet below the adit level shows a vein averaging 15 inches in width of fine looking ore. The north shaft, 1,200 feet from this point, is down over 90 feet on a vein equally as good. Suitable buildings are going up, and there are timbers enough on hand to last during the winter. A milling of 80 tons of ore taken as an average from all parts of the mine yielded $40 per ton. When the facility with which the Red Jacket can be worked is taken into consideration, this result must certainly leave a handsome margin for profit.

SOUTH MOUNTAIN.—The blower and other machinery for the S. M. S. Co's furnace arrived at Bullion last Thursday, and would immediately be put in position. Secretary Simondi informs us that the piping to connect with the machinery will be sent from here next Monday, and, that before the issue of another *Avalanche*, they will be turning out bullion. There are about 21,000 bushels of coal in readiness, which will keep the furnace running for some time, and they will have ore on hand as fast as it is needed. We understand that a few hundred dollars more are needed to pay the expenses incurred up to the present time. There will doubtless be enough additional stock taken to raise the money, as it is almost certain to be a profitable investment.

WAR EAGLE.—Owing to the difficulty of obtaining men, less work than usual is being done in this mine. In the meantime, however, the mine is being thoroughly prospected with a view of having a body of ore from which a large amount of ore can be mined when labor is more plentiful. The vein in the 5th level north, both in the stopes and drift is of good size and quality. South in the same level it is smaller, but the prospects are good for finding a nice vein in that direction. Work will soon be commenced in the 4th level south, as everything indicates a good vein ahead in that portion of the mine. The 3rd level stopes show finely throughout, and it is estimated that there are at least 1,600 tons of good milling ore in these stopes alone.

EMPIRE.—J. H. Thomas, the foreman of this mine informs us that the shaft is well timbered to the 3rd level, and the drifts at that point started both north and south. A contract has been let to Dave Jones, Charley Leach & Co. to sink the shaft 100 feet for the 4th level. The foreman says that in two weeks from now he will have room for 30 more drillers. That looks like business. The ore-house will be enlarged the coming week. The Owyhee Company's mill is laying in a supply of wood, castings, quicksilver, &c., and will run all winter on Empire ore, of which there are 300 or 400 tons already piled up at the mill. The Cosmos mill is crushing Empire ore at present with good results.

MAHOGANY.—The 5th level drift south is in 120 feet, showing a 15-inch vein of good ore. The 6th level drift south is in 115 feet, showing upon the face of it a fine vein of ore, rich in silver and permeated with free gold. Ten tons of ore are now being daily hoisted from the mine, which quantity will soon be largely increased. They have 350 tons in the ore-house, and will commence hauling to the mill to day. Foreman Carter says that there will be no trouble in keeping the mill constantly running, as all the men are at work in pay ore.

MINNESOTA.—There is a considerable stir about that mine just now. They have a splendid ledge in the 4th level south—better than has been seen in the mine for many months. Within two weeks the 4th level drift and the south winze from the third level will be connected. When that is done foreman Schmitt says he will be able to take out from 10 to 15 tons of excellent ore every day.

PAUPER.—They are busily engaged in putting up buildings at this mine. The cold weather has stopped all work on the mine untill after it shall be enclosed. The scarcity of lumber retards the work of building, which is being done as fast as possible under the circumstances.

GOLDEN CHARIOT.—The 9th level drift south is now in 50 feet, showing a 2 foot vein of fine looking ore. There are 20 miners at work stoping in the 5th level south. The Ellmore mill will commence crushing Golden Chariot ore to-day.

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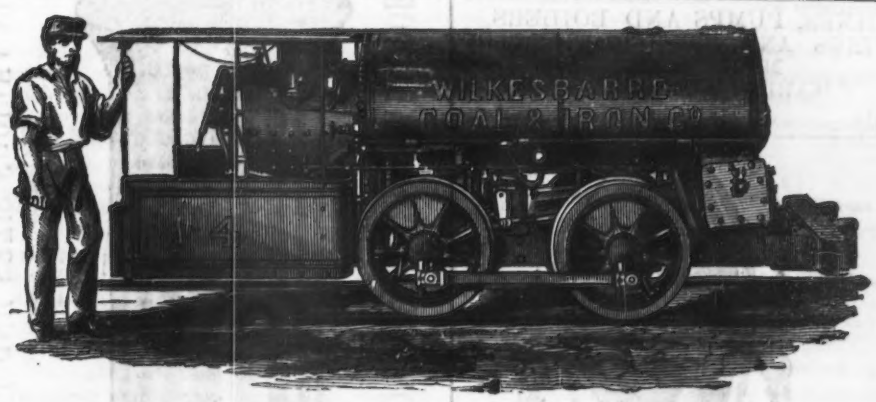

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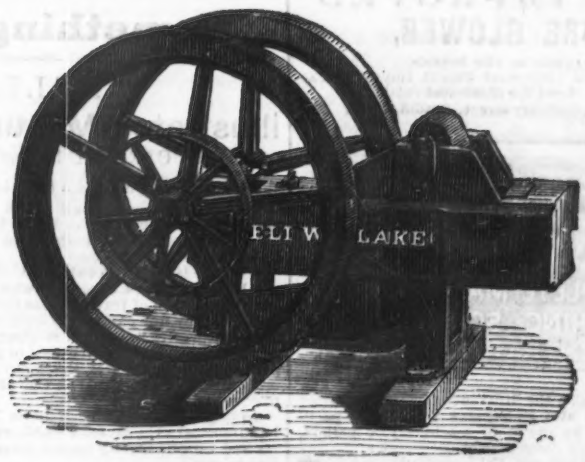

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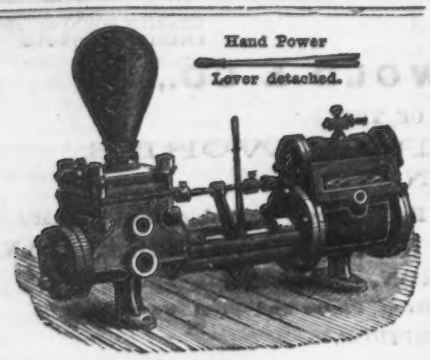

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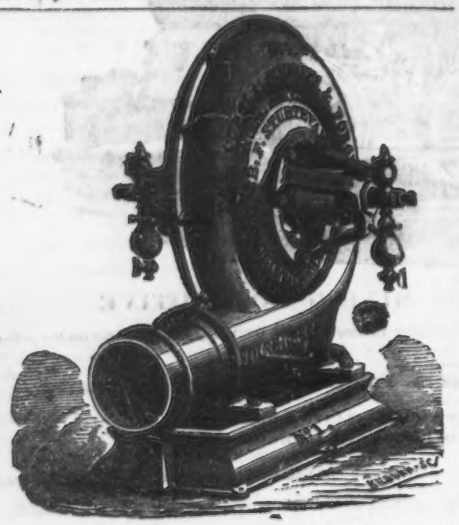

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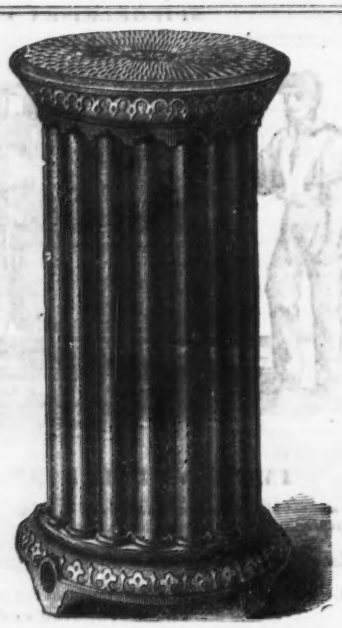

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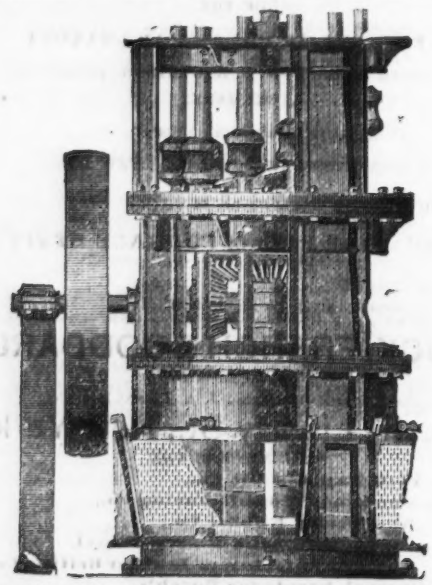

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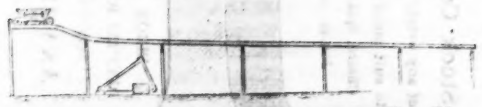
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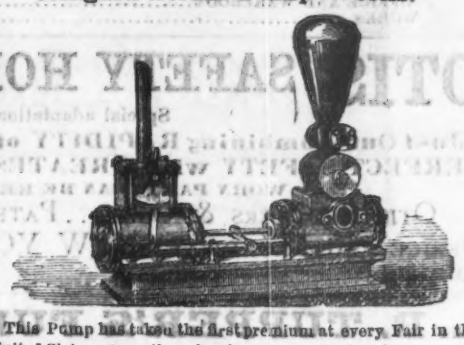
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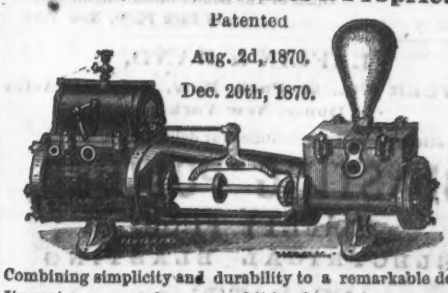
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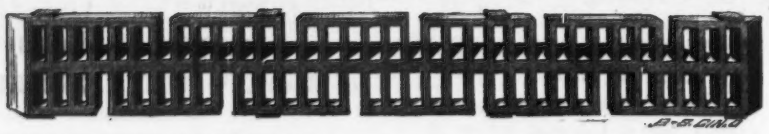

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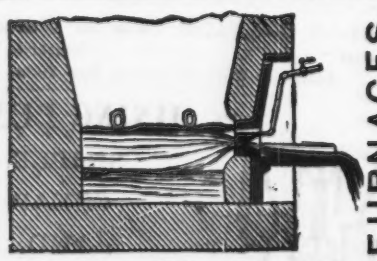

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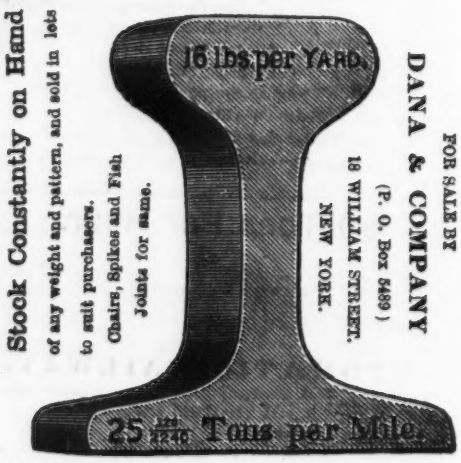

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